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ANGINA PECTORIS AND PSEUDO-ANGINA

A CLINICAL STUDY WITH ESPECIAL REFERENCE TO LANCINATING PAIN *

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It is traditional for the chairman's address to contain a note of general comment or propaganda. This address has such a side purpose, and it will accomplish in large part its object if happily it can promote the idea of more detailed histories leading to better diagnosis and thence to better handling of patients with precordial pain.

The material for this study is summarized from the records of 253 patients complaining of pain in the region of the heart or, in two instances, pain elsewhere which was thought to be related to the heart or the aorta (stinging effort pain in both wrists with syphilitic heart and aorta, and viselike effort pain in the back in a case of hypertension angina). Pain obviously due to pleurisy, herpes, etc., is not included.

I questioned and examined the patients myself, all since 1919, when, following a visit to Sir James Mackenzie and being much impressed by his gospel of symptom study, I began collecting histories with as much symptom detail as possible, often by use of shorthand, recording verbatim statements of patients. Many records were omitted when unintelligence of patients or other things prevented securing sufficient data. All but one or two were studied in the office, and hence were ambulatory; and, except for rarely slight edema of the legs, all were free from the usual manifestations of congestive heart failure—quite a different group from those to be found in a hospital ward. The Veterans' Bureau referred 124 for consultation, and some others were referred by corporations employing men for the most part. The fact that most of these patients were young men makes the series unsuitable for studying age and sex distribution of precordial pain for the population at large. The composition of the series according to age, sex and the presence or absence of circulatory disease in general and angina pectoris specifically is shown in the accompanying table. The thirty-six cases diagnosed angina, it will be seen, show the usual predilection for males and for middle and advanced age.

The rules used for separating the "normals" from the pathologic group require explanation, and would in some individual cases be open to debate. In addition to routine examination and laboratory work, electrocardiograms and 2-meter roentgen-ray plates were obtained in the great majority of cases and in practically all those of doubtful classification. Definite structural changes, such as valvular disease or enlarged heart, were listed in the pathologic group together with conduction delay (increase in P-R or Q-R-S intervals), notching, TI or TII inversion, right or left ventricular preponderance, and hypertension. Where doubt existed, as in borderline blood pressure readings or the suggestion of right or left preponderance, the case was listed as one of circulatory disease. The "normals" were normal in the sense of lacking hypertension or demonstrable structural circulatory disease, and the diagnoses appearing on these records are effort syndrome, neurosis, fatigue, premature contractions, functional systolic murmur, and digestive or other diagnoses not relating to the circulation. The diagnoses of angina were made according to the usual rules of differential diagnosis, which space forbids reciting here further than to say that while some were mild as to the amount of suffering, all were considered liable to sudden death from the disease.

Distribution of Cases by Age, Sex and Presence or Absence of Circulatory Disease *

Age	Circulation Normal			Circulatory Disease			Total Normal and Disease
	Male	Female	Total	Male	Female	Total	
11 to 20	1	0	1	0	0	0	1
21 to 30	52	8	60	35	2	37	97
31 to 40	20	0	20	21 (2)	7	28 (2)	48 (2)
41 to 50	5	6	11	17 (6)	9	26 (6)	37
51 to 60	4	4	8	34 (17)	4	38 (17)	46
61 and up	0	0	0	12 (6)	12 (5)	24 (11)	24
	82	18	100	119	34	153 (36)	253

* Numbers in parenthesis indicate cases of angina.

TYPES OF PAIN

Although many descriptive terms were used by these patients to describe their painful sensations, it was found that most of them were readily classifiable into three main types, which may be termed (1) lancinating, (2) dull and (3) compression pain.

Lancinating pain is "sharp," "nipping," "jabbing," "sticking," "twisting," "grabbing," like a "stitch" or the "tearing of paper," "darting," "shooting," or, when more severe, like a "knife thrust," a "hat pin plunged through the heart," a "red hot needle" or a "stroke of lightning." The cardinal points of similarity are the instantaneous onset and the limited area involved. Usually the patient will indicate location by the tip of the finger placed on one or more spots below or above the left nipple or in the tricuspid area, or occasionally will indicate a narrow streak where pain flashes through from one nipple region to the other or diagonally from the precordia up across the sternum, etc. As a rule this pain disappears after one or several seconds as abruptly as it came, but may recur (usually but not always in the same spot) at intervals of some seconds or minutes. While mostly trivial, they range by easy gradations in severity up to a terrific "stroke," which fells one man instantly to the floor or crumples another into a helpless form on the seat of the automobile he has been quietly driving (two cases in the "normal" group). Severe lancinating pains are usually followed for some time by a dull, diffuse pain in the same region.

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* Chairman's address, read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

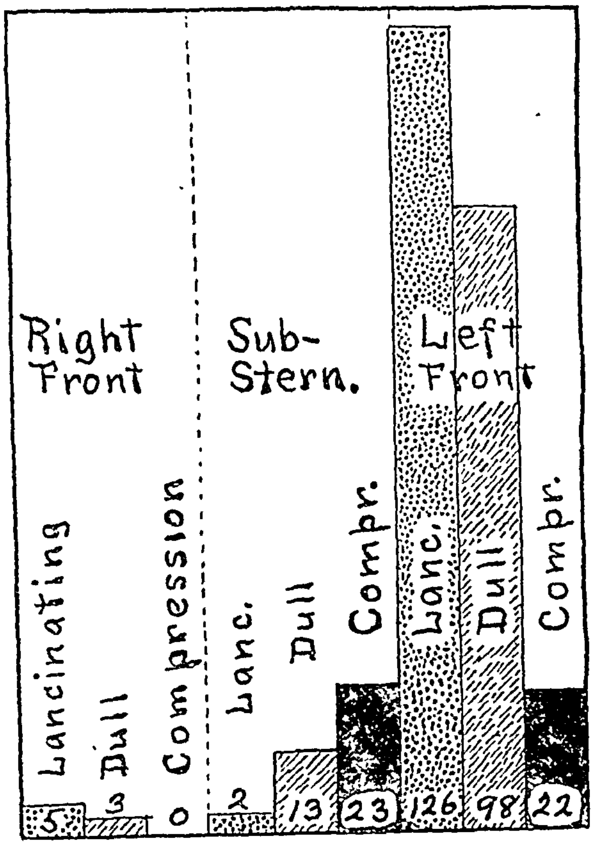

Chart 1.—Distribution of pain in the entire series.

Compression pain comes next in point of homogeneity. It is "viselike," "cramping," "clamping," like a "belt about the heart or windpipe," "grinding," "crushing the bones," a pain like a "stone" or "petrified feeling" or a great weight, or like internal pressure, as of pent up gas in the region of the heart or sternum, in which case the patient may belch with or without relief. This category shades off into allied sensations of heaviness, fulness, etc., which are not really pain and not included in this summary—but the line of demarcation at times is doubtful. Compression pain may begin quickly but not so instantaneously as the lancinating pain, and the intelligent patient can usually recall distinct crescendo and decrescendo characteristics as it reaches its peak and subsides. The duration is usually a few minutes, sometimes seconds or hours. Topographically, it is diffuse and with ill defined borders. One case here classified as substernal involved the whole chest.

What is here designated as dull pain is the assortment remaining after taking out those with distinctive lancinating or compression qualities. The commonest descriptive term is "dull ache." Others are simply "ache," "sore feeling" (not including skin tenderness), "burning," "gnawing," "drawing," "dead pain," "tired pain," "dull heavy" or "pressing pain" (the latter two being here included if the pressure element appears to be subordinate—some doubt at times). Dull pain is usually of gradual onset and offset and lasts from minutes to months. It often occupies a palm-sized area, sometimes larger, sometimes (especially "burning") the size of a half dollar.

Chart 1 shows the distribution of these three pain types in the entire series, as they occur under the sternum and in the precordial region. A few patients describe similar pains over the right front of the chest, and these are also shown in the chart. Numbers at the bottom of columns indicate numerical frequency of the type of pain to which they refer. Sometimes two or three types of pain are described by the same patient, so that the list of pains (292) is larger than the number of cases (253).

It will be seen that lancinating pain greatly predominates, and with few exceptions is in the precordial region; that dull pain comes next in frequency, and is also mostly precordial but not infrequently substernal; and that compression pain, while distinctly less frequent in general, predominates in the central chest location, and is about equally common in the precordia.

Charts 2, 3 and 4 show, respectively, the pain distribution in the group of 100 "normals," in thirty-six cases of angina pectoris, and in the total circulatory disease group of 153 cases (including angina).

The small angina group is conspicuous for its paucity of lancinating pain. Only one of the four instances was unassociated with other types of pain. This patient was a physician, aged 59, who suffered all one night an extremely severe sharp, piercing pain through the heart region and radiating into the left arm. Examination, including an electrocardiogram, was negative, and after six years he is still well, active and has never had a recurrence of pain—all of which throws some doubt on our original diagnosis of angina. On the other hand, the angina group nearly monopolizes the compression pain, especially under the sternum, where seventeen are angina, three other types of circulatory disease, and three "normals."

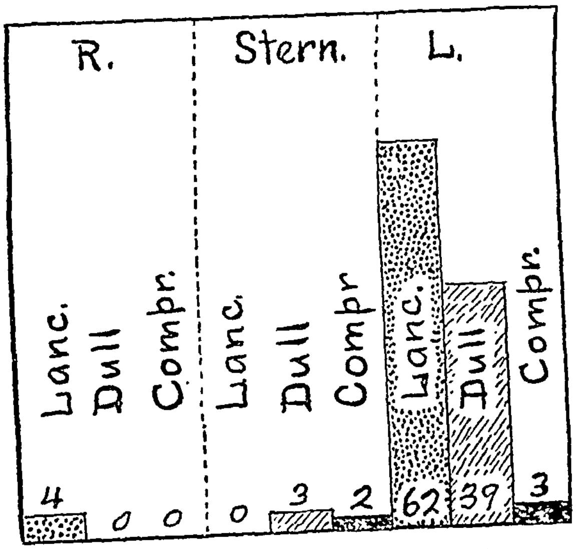

Chart 2.—Distribution of pain in normal (100) cases.

Lancinating pain is about equal in frequency in the "normal" and general pathologic groups (charts 2 and 4); but when the group sizes are considered it is relatively more common among "normals": 66 per cent of "normals" and 44 per cent of the general circulatory disease group.

Dull pain occurred in 42 per cent of the "normals," 53 per cent of the general circulatory disease group other than angina, and in 28 per cent of the angina cases; but, whereas the location of this pain in the angina group was nearly equally divided between sternum and precordia, the others show a strong predilection for the precordia.

From these descriptions of pain types and their locations, it appears that in a given case, when the question of angina is raised, the quality, timing and topography of the pain often furnish strong presumptive evidence. Other important data to be derived from histories relate to pain radiation, exciting causes, means of relief, etc.

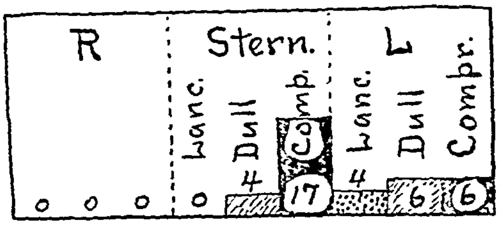

Chart 3.—Angina Pectoris (thirty-six cases).

PAIN RADIATION

Among the 100 "normals," fifteen described radiation; one of substernal compression radiating to the back; five of precordial dull pain to the left arm, one each to both arms, the left scapula, the left clavicle, the neck and the epigastrium; and four of lancinating precordial pain all to the left arm. One of the latter described his sensation as like a "grab" or "knife thrust" near the left nipple, passing quickly out through the left arm and instantly disappearing when it reached the end of the little finger, "like an electric shock." Several years previously, when the symptom began in the course of an acute pleurisy, this sensory phenomenon was repeated regularly for a long time with each heart beat. Now it is only an occasional occurrence. It has never been related to effort, excitement or meals.

Among the 153 patients with circulatory disease, fifty-three described pain radiation, and twenty-five of these belong to the thirty-six angina cases. Of the latter, the left arm alone is recorded fourteen times, both arms seven times, both axillae once, the neck and jaw once, the abdomen once, and the right shoulder once.

For the remainder of the pathologic group, the radiation tabulation is as follows: left arm, fourteen; both arms, one; neck, three; left shoulder, four; left axilla, two; left scapula, one; midback, one; abdomen, one; across sternum, one.

Among these fifty-three instances of radiation in the whole disease group lancinating pain at the point of initiation occurred fifteen times; dull pain, seventeen times, and compression pain, twenty-one times.

RELATIONS TO PHYSICAL EXERTION, MENTAL EXCITEMENT AND FOOD INTAKE

All but one of the thirty-six angina patients recalled definite and usually constant and immediate relation of physical effort to the onset of pain (two instances of lancinating pain; seven, dull; twenty-six, compression); six of them also recognized mental excitement as an immediate cause of pain (two, dull; four, compression pain); and twenty-three were conscious of being more susceptible after meals (four, dull; nineteen, compression). Only one thought that his pain (dull) was more likely to occur some time after completion of effort.

In the remainder of the pathologic group (117 cases): twenty-two (thirteen, lancinating; six, dull; three, compression) recognized muscular effort at times at least to have an immediate relation to pain; six (four, lancinating; two, dull), a delayed relation; eleven (five, lancinating; five, dull; one, compression) thought excitement had at times an immediate relation; four (three, lancinating; one, dull), a delayed relation; and five (three, lancinating; two, dull) recognized increased susceptibility following meals.

Among the 100 "normals," sixteen (nine, lancinating; five, dull; two, compression) described at least at times immediate relation to effort; sixteen (eight, lancinating; eight, dull), a delayed relation; two (both dull), an immediate relation to excitement; five (one, lancinating; four, dull), a delayed relation; and three (dull) thought attacks more likely to occur after meals.

The parenthetical figures in this analysis are too small to form a basis for any conclusions, but suggest that possibly dull pain is less commonly a sequel of effort in the nonangina pathologic group than among "normals"; that mental excitement is more often followed by all types of pain in the general pathologic group, and that these "normals" are more prone than others to experience delayed association between effort and dull or lancinating pain.

The difference between the angina cases and all the others, however, is even more striking than the figures indicate. With the former, the relations described are definite and immediate, and the information is often given voluntarily in advance of questions. The others rarely volunteer their statements of these pain relations, and when the questions (inevitably more or less leading questions) are put, often have to pause before making an affirmative answer.

ASSOCIATED MENTAL STATES

I have often been disappointed in the effort to recognize the clear cut distinction in psychic reaction toward the pain which is commonly assumed to exist between angina and other conditions that simulate it. Certainly, some of the most badly frightened patients in this series were in the "normal" group with severe lancinating pain; but it was difficult to decide later whether their fear at the time was fear that they might have angina or simply the conviction of impending dissolution, which is supposed to characterize true angina.

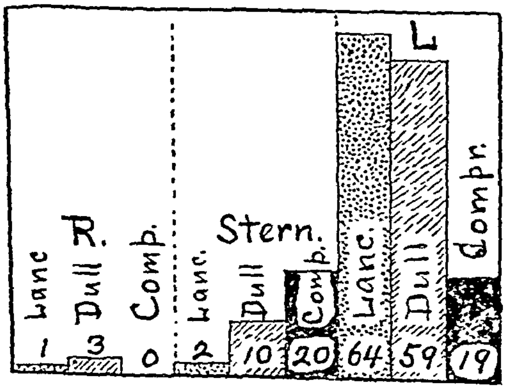

Chart 4.—Circulatory diseases (152 cases).

On the other hand, the majority of the thirty-six angina patients failed to describe the typical "angor animi"; and, in fact, most of those whose life tenure seemed most insecure, including several who have since died, suffered comparatively little psychic reaction with their attacks.

A quite different matter is the rôle of mental state as a factor in pain causation. Fear, conscious or subconscious, plays an indeterminate but undoubtedly important part, frequently as an aggravant and at times apparently as the sole etiologic agent, in nonangina precordial pain. One robust young man with circulatory apparatus normal in every respect, except for some premature contractions, dated all his precordial pain, as well as shortness of breath, exhaustion, etc., from the day he was rejected for employment on account of supposed heart block. Many of the histories in the "normal" as well as the general pathologic group indicate the preoccurrence of psychic traumas of this kind, the effect of which it is usually quite impossible to separate from other factors.

RESPIRATION, POSITION OF BODY, GENERAL HEART CONSCIOUSNESS, AND CUTANEOUS SENSITIVENESS

During attacks of angina it is quite common for the patient to feel "as if the wind is cut off" by the constricting sensation of the pain, or he may breathe naturally or may expand the chest in an effort to relieve the pain. On the other hand, patients in the other groups, when they describe any respiratory relations to the pain, usually say they hold the breath for fear of increasing the pain. "If I breathed, it would tear me in two" is an example of these descriptions, especially of some of the more severe cases of lancinating pain.

Certain motions of the trunk, use of the left arm, or lying a certain way in bed were designated as exciting causes of pain in various nonangina cases. Others (not referring to orthopnea) objected to certain positions in bed without reference to pain production, their descriptions indicating most often consciousness of heart action, vague discomfort, liability to nightmares, etc. Such position aversion was noted in 19 per cent of the angina cases, 32 per cent of the remaining pathologic group, and 38 per cent of the "normals." Most often the left lateral reclining position is the one avoided, but some avoid the right side, some both sides, others the back. A pathologic condition of the heart seems to have little, if anything, to do with this. One fellow with a tremendous heart avoided the left lateral decubitus not from any discomfort of his own but because the rocking of the bed thereby produced prevented his wife from sleeping.

Palpitation in the sense of consciousness of heart action independent of exercise or excitement, extrasystoles, and the like, was noted in 25 per cent of the angina cases, 51 per cent of the remaining pathologic group, and 53 per cent of the "normals."

Cutaneous hyperesthesia or hyperalgesia was noted at times in all groups, but most cases were seen some time after attacks, and the figures are too small for profitable discussion.

Space forbids discussion of pain mechanism or of etiology further than to state that the nonangina pain symptoms were often preceded by infectious disease, overfatigue, etc., and the subjects were largely constitutionally susceptible nervously.

Means of pain relief were the usual ones in the angina group (cessation of effort, nitrites); in the others, general regulation of rest and exercise, psychotherapy and bromides.

COMMENT

Notwithstanding the still boiling discussion of theories of etiology and the considerable variation in symptomatology, the term angina pectoris has continued for the century and a half since Heberden's writings to receive general approbation for the reason that the symptom complex, while varying much in individual lines, nevertheless has a fairly definite general physiognomy and always carries the portent of sudden death.

Not so with other types of pain in or near the heart. For these, many names have been used, such as pleurodynia, toxic angina, secondary angina, nervous heart pain and fatigue pain. Most of these terms are derived from ideas of pain mechanism or etiology; and while all would welcome a well founded etiologic classification, the fact remains that we still know very little about the causes of these pains. If the pleura is responsible, why is it so much more often the left pleura? A "toxic" cause, of course, is highly speculative. "Secondary angina" implies a relation to angina which is uncertain. "Nervous heart pain" and "fatigue pain" are undoubtedly at least partially descriptive of many cases, but such a division of the cases in this series would involve much doubt and overlapping. The relation of effort to pain in the "normal" and general pathologic groups in this series does not show the closer association in the latter that would be expected if fatigue were an important immediately precipitating factor.

For these reasons I use the old and latterly much condemned term pseudo-angina. It sounds as if we do not know exactly what we are talking about; but that, unfortunately, is exactly the fact. It does convey adequately the conception, which is of paramount practical importance, of a condition or group of conditions liable to be confused with angina but which is not angina.

One can be a good physician without knowing the theories of precordial pain, but he cannot, without grave injustice, undertake to advise a patient with such pain unless he is prepared to discriminate intelligently between angina and pseudo-angina; for a patient mistakenly diagnosed as having angina may suffer thereby as much as another with a very bad operative result at the hands of an incompetent surgeon.

Cases of outspoken angina are not often missed. Those otherwise normal with minor aches or little "nipping" or "sticking" precordial pains seldom puzzle the physician. But the mistaken diagnosis of angina is likely to occur (1) where pseudo-anginal pain is associated with age, sex, blood pressure, valvular disease or other conditions suggesting angina (in which event it is sometimes forgotten that none of these things prevent one from having pseudo-angina); or (2) when pseudo-anginal pain happens to be severe. This is usually lancinating pain ("stroke of lightning," "red hot needle," plunged through the heart).

From some descriptions of angina pectoris, one is led to feel that knifelike, stabbing pain is a common characteristic of the disease. My own experience, so far as it now goes, gives the opposite impression. Of these thirty-six cases which I believed to be genuine angina, only four patients described lancinating pain, and in only one of these was it unassociated with other pain suggesting the compression quality. And furthermore, as already stated, its duration in this case was longer than the ordinary lancinating pain, and also the later history throws some doubt on the original diagnosis.

While this angina group is too small to support more than a pretty strong doubt as to the propriety of including lancinating pain at all in the symptom picture of angina, the pseudo-angina cases are numerous enough to justify the conclusion that lancinating pain is highly characteristic of this condition, and this is the especial point which I feel has lacked and deserves recognition. By lancinating pain is meant a sharp, shooting or darting pain felt in a point or streak, reaching its full intensity instantly, and usually ceasing in from one to several seconds quite as suddenly and usually without perceptible decrescendo, but, if severe, to be followed often for an indefinite period by a dull and diffuse pain and often increased cutaneous sensitiveness. It usually does not radiate, but may do so along the ulnar distribution and sometimes elsewhere, occasionally synchronizing with heart beats as Lewis has previously noted. Effort or mental excitation seldom seems to precipitate it, but the following rest period may be one of greater susceptibility. Meals have little, if any, effect. Certain motions of the left arm or trunk or turning a certain way in bed can occasionally be counted on to produce it. It is the commonest type of precordial pain, at least in the particular material composing this series; in fact, it is probably more common than the figures indicate, because it is usually mild and often forgotten by normally constituted persons. But from these mild cases it can be traced up through easy gradations, without essential modification except in intensity, to instances of terrific pain with an associated mental state closely simulating that of genuine angina.

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CHRONIC PERICARDITIS

THE CLINICAL AND EXPERIMENTAL ASPECTS [*]

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Inflammation of the pericardium, be it an acute or a chronic process, represents one of the pathologic lesions of the body which the clinician rarely diagnoses and which is discovered only at necropsy. The explanation of this observation lies not so much in the want of clinical data that may have a bearing on the diagnosis, but rather on the failure of the physician to make use of all the available facts disclosed by complete and thorough examination of the patient. The so-called pathognomonic signs are looked for, and, if not observed, the case is dismissed as one without pericardial involvement. Conclusive signs are rare. In this condition, as "in most other inner disease, we have to regard the case as a whole, comparing all the symptoms and signs and giving to each its due perspective." [1]

There is another factor that may be responsible for the inability of the physician to diagnose pericardial lesions which we will discuss briefly. This lies in the dogmatic statements of textbooks that such and such signs are present, when actually they are present only occasionally or are entirely absent. In acute fibrinous pericarditis it is taught that a friction rub with quite typical characteristics is present. Actually, a friction rub is often an evanescent, fugitive sign that may be heard at one time and not at another time. In pericarditis with effusion, there is a host of signs that are esteemed as virtually pathognomonic, yet these signs represent only the effects of enormous collections of fluid in the pericardial sac. When the clinician fails to find these he is at a loss to know whether fluid is present or absent.

Still a third factor that minimizes our attention to pericardial disease is the vividness of the symptoms, produced secondarily, of associated cardiocirculatory failure. These clear-cut symptoms conceal the less definite, less obvious signs of pericardial disease which may be responsible for the circulatory embarrassment of the patient and which should be relieved before efficient help can be given the struggling, inefficient circulation.

TABLE 1.—*Total Number of Necropsies Done at Charity Hospital*

Jan 1 to Dec 31, 1925	408
During year of 1924	295
During year of 1923	303
During year of 1922	378
During year of 1921	336
Total	1,720

These three conditions are of importance; but probably of greater importance in failure to diagnose pericardial disease lies the well known fact that pericarditis rarely if ever exists as a primary disorder, but is secondary to some other pathologic condition within the body. This statement applies to each of the three important types of pericarditis, the fibrinous, adhesive or effusive types, which occur only secondarily to or as a complication of rheumatic fever, tuberculosis, pneumonia, sepsis, nephritis or some other more remote cause.

In an endeavor to discover why pericarditis is generally overlooked and to see whether we could not find some additional data that might aid in the diagnosis of this disease, we have reviewed all necropsy and clinical records of proved cases of pericardial involvement at the Charity Hospital within the last five years. We also have performed a series of experiments on dogs, studying them particularly from the roentgenologic and electrocardiographic standpoint.

TABLE 2.—*Cases Showing Pathologic Conditions of Pericardium*

Jan 1 to Dec 31, 1925	55
During year of 1924	67
During year of 1923	51
During year of 1922	68
During year of 1921	64
Total	305

It is our purpose to discuss first the pathologic data and then to touch briefly on the experimental work.

THE PATHOLOGIC DATA

The necropsy protocols of the Charity Hospital for the last five years were studied. The clinical history of those cases in which some pericardial condition was given as one of the contributory causes of death and those in which such was presumed by us to be the case were gone over in detail. The incidence of necropsies at the hospital during this period is given in Table 1.

Among these 1,720 necropsies, record is made of 305 cases that showed pericardial involvement, distributed by years as detailed in Table 2. The pericardial involvement consisted of (*a*) increased fluid in the pericardial cavity, 50 cc. or more; (*b*) pericardium adherent to the heart, or (*c*) pericardium adherent to the chest wall.

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[*] From the Department of Medicine, Tulane University of Louisiana.

[*] Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926

[1] Allbutt, T C: Diseases of the Pericardium, Oxford Medicine, Oxford University Press 2: 280, 1920

Of these 305 cases, thirty-nine presented pericardial lesions which the pathologist believed were contributory causes of death. From a study of these figures it may be seen that pericarditis, either acute or chronic, was found in 11.9 per cent of the bodies at necropsy. These figures are somewhat higher than the incidence of pericarditis found by Wells.[2] In 1,048 necropsies he found that there was evidence of acute (4.5 per cent) or chronic (6.8 per cent) pericarditis in 128 cases, or 11.3 per cent. The combined figures (11.3 per cent) of the two types of pericarditis are closely similar to our total percentage.

Locke,[3] on the other hand, found in a study of the 3,683 necropsies at the Boston City Hospital for a period of nineteen years that pericarditis was present in an acute form in 4 per cent of all necropsies and in a chronic form in 12.6 per cent. It must be borne in mind, however, that various degrees of pericarditis may exist as pathologic findings in a goodly number of cases without any evidence either clinically or pathologically of the lesion having had any effect on the heart or circulation, or contributing to the death of the patient. It is for this reason that we have analyzed only sixty-eight case histories, disregarding the other 237 cases of pericardial involvement which make up 88.1 per cent of the whole number.

TABLE 3.—*Cases in Which Pericardial Condition Was Considered as One of the Causes of Death*

Jan. 1 to Dec. 31, 1925	16
Jan. 1 to Dec. 31, 1924	10
Jan. 1 to Dec. 31, 1923	10
Jan. 1 to Dec. 31, 1922	16
Jan. 1 to Dec. 31, 1921	16
Total	68

In addition to the thirty-nine cases that the pathologist thought were responsible in part for the death of the patient, there were twenty-nine cases in which from the records of the necropsy and the history of the patient it was believed that the pericardial condition also played a part in hastening death. The yearly incidence of these more serious lesions is detailed in table 3.

ANALYSIS OF CASE RECORDS

In our analysis, the cases of pericarditis have been divided into four groups: (1) the acute or subacute type of serofibrinous or hemorrhagic pericarditis; (2) the type with complete obliteration of the pericardial cavity; (3) the type with partial obliteration, and (4) that with parietal adhesions only.

In the first group we find that the average weight of the heart in seventeen cases in which acute pericarditis was presumed to exert a contributory effect on the death rate was 363.2 Gm. The left ventricular thickness was 17.4 cm., and that of the right ventricle was 6.1. The average length of the body in these seventeen cases was 161.7 cm. Five other cases were found which presumably exerted a contributory effect in causing death. The figures in these cases showed that the average weight of the heart was 300 Gm.; left ventricular thickness, 21 mm.; right ventricular, 4.9 mm.; the average length of the body was 169.7 cm. The etiology in the majority of the cases of acute or subacute pericarditis was found to be some acute process, most frequently in the thorax, as lobar pneumonia, lobular pneumonia or acute endocarditis. Other causes included peritonitis, septicemia, and terminal nephritic lesions in three of the cases.

Complete obliteration of the pericardial cavity occurred in fifteen cases. The cause of death in the majority of these cases was cardiac failure. The average weight of these fifteen hearts was 443 Gm. The measurement of the left ventricle was 20 mm.; of the right ventricle, 6.8 mm.; the average length of the body was 166.6 cm. In this group of fifteen cases one case was found in a small child with naturally small heart. This reduces materially the average heart weight. If we exclude this one case, we find that the average heart weight in complete obliteration of the pericardial cavity is 463.9 Gm.

We have analyzed twenty-one cases in which there was partial obliteration of the pericardial cavity. In ten of these cases the pericardial lesion was held to be a contributory factor in the cause of death. In these ten cases the average heart weight was 536.6 Gm.; the width of the left ventricle wall was 23 mm.; of the right, 7.7 mm., and the average length of the body, 167.7 cm. In all cases in which the pathologic lesion was held to be a contributory effect, the average heart weight was 503.3 Gm.; left ventricular thickness, 18.6 mm.; right, 6.8; average length of the body, 161.2 cm. In these last two groups were three cases of aortic insufficiency which materially increases the average heart weight.

Parietal adhesions between the pericardium and the chest wall were found in ten cases. In these ten cases, the average heart weight was 384 Gm.; left ventricular measurement, 25 mm.; right ventricular, 7 mm., and average body length, 169.6 cm.

THE PATHOLOGIC DATA

We have laid stress in our account of the several types of pericarditis on the heart weight and length of the body and the thickness of the ventricle walls, as we feel that it is important to gain some information as to the effect of pericardial disease on the heart and the development of ventricular hypertrophy. We noticed that in acute pericarditis, as was to be expected, very little effect was produced in the cardiac size by the acute lesion. On the other hand, in the chronic conditions in which the pericarditis is presumed to have persisted for some time, we find that the average weight of the heart, when there is complete obliteration of the pericardial cavity, is nearly 100 Gm. greater than in the acute types. Partial obliteration of the pericardial cavity apparently resulted in a heart in which the average weight was 72 Gm. heavier than it was in those in which there was complete obliteration of the pericardial cavity. This is to be explained, in part at least, by the occurrence of aortic insufficiency in three of the patients. These three hearts were very much larger than any of the hearts in which there was obliteration of the pericardial cavity, the average heart being nearly 300 Gm. more than when there was pericardial obliteration. In none of the cases that we studied in which there was chronic pericarditis did we find hearts that in any way approached in size the enormous bovine hearts of aortic regurgitation. This is contrary to the generally accepted teaching that pericarditis of the chronic adhesive type, more particularly with adhesions of the chest wall, is responsible for enormous cardiac hypertrophy. The effect of parietal adhesions only on cardiac hypertrophy is apparently not particularly conspicuous, and the disturbance of the pathologic physiology of the organ seems to be negligible. In the ten cases in which such adhesions were present, the figures are relatively close to the figures given for the acute types of pericarditis.

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[2] Wells, H. G.: The Pathology of the Healed Fibrous Adhesion of the Pericardium, Am. J. M. Sc. **123**: 241 (Feb.) 1902.

[3] Locke, E. A.: The Occurrence and Diagnosis of Pericarditis, Boston M. & S. J. **175**: 591 (Oct. 26) 1916.

CLINICAL DATA

The facts elicited from the case histories of the patients taken while under observation in the wards give very little information that might be of value in diagnosis, but do give some interesting etiologic facts. It was found that the acute pericarditis occurred in persons of an average age of 31.5 years. Of these persons, sixteen were negroes and six were white patients; sixteen were males and six were females. Complete obliteration of the pericardium was found almost without exception in older persons. Except for one subject of 15 years, none of these patients were under 40. The average age was 58.7 years. Eight were negroes; seven belonged to the white race. All of these patients were males. These figures are of some interest because of the prolonged duration of life in all except one patient, again showing that obliteration of the pericardial sac itself takes a minor place in producing cardiac symptoms.[4] In all these patients the condition had apparently existed for a great many years, and many of them lived well past the age of 60.[5] The same generalization applies to the patients with partial obliteration of the pericardial cavity. The average age at time of death was found to be 50 years, and again these figures were materially reduced by the presence of two subjects aged 21 and 23 years. It is interesting to note that of the twenty-one patients with partial obliteration of the pericardial cavity, twelve had syphilis, an etiologic agent not generally held responsible for pericardial disease of this particular type.

The parietal adhesion group died as a result of acute infection and were therefore relatively young, averaging 39 years. Two of these patients, both over 60 years of age, died as a result of cardiac failure.

The subjective symptoms in none of these case histories that we studied brought out any information of value. Most of the patients were either suffering from cardiac failure with the usual symptoms, or had some intercurrent condition that obscured the subjective symptoms referable to the heart. The records of the physical examinations disclosed in only two cases any notes which indicated that there was a suggestion of pericardial disease on inspection of the patient. The hearts were uniformly found to be enlarged on percussion when there was enlargement of the heart as shown by the necropsy. Various types of murmurs were heard, but no one of them was characteristic in any sense. A prenecropsy diagnosis of pericardial disease was not made in any case, although a study of the records discloses that pericardial lesions were recognized or presumably thought to be present in many instances but were not believed to have any bearing on the primary disease of the patient.

RECOGNITION OF CHRONIC PERICARDITIS

We are not interested in the acute types of pericarditis at this time—more particularly the acute types associated with friction rub and with large quantities of fluid in the pericardial sac, as we believe that these conditions can be recognized and are recognized in the majority of cases. The study of our clinical data discloses that chronic pericarditis is rarely recognized. This is in agreement with Wells, Locke and Riesman,[6] as well as with similar statements in most textbooks in the authors' description of chronic pericarditis.

The symptomatology of chronic pericarditis seems to belong entirely in the silent group, as there are no symptoms until the development of cardiac failure that might suggest the presence of pericardial disease. It is necessary to depend almost entirely on the examination of the patient. As to the possibility of an adherent pericardium being present without symptoms or signs, we may assume such to be the case (1) in the young person with a chronic valvular disorder associated with considerable hypertrophy of the heart; (2) when there is valvular disease of the heart which fails to respond to digitalis, and (3) in those patients whom the physician had the opportunity of seeing when an acute pericardial lesion was demonstrable.

The physical signs of adherent pericardium depend almost entirely on the presence of adhesions to the chest wall. These signs include the common phenomena of systolic retractions of the interspaces. Regelsberger[7] lays considerable stress on a graphic method of demonstrating diastolic bulging and systolic retraction of the apex. The classic sign of Broadbent depends on adhesions from the pericardium to the posterior parietes causing a systolic retraction between the eleventh and twelfth ribs posteriorly. The fixation of the heart to the diaphragm may also play a part in causing this sign, as in a certain number of cases the pull on the diaphragm results in retraction of the lateral interspaces to which the diaphragm is attached. The pulsus paradoxus may or may not be present. It is indicative of adhesions that compress the pulmonary veins or the aorta when the chest is expanded.[8]

Extensive adhesions to the chest wall anteriorly produce physical signs which are often very pronounced, as marked retraction of the whole chest wall, but fortunately such extensive involvement occurs only rarely. Other palpatory and visual signs include fixation of the apical impulse when the patient is changed from the left lateral or the right lateral or the upright position. Precordial bulging is occasionally seen, and occasionally we also note Friedrich's sign or diastolic collapse of the veins in the neck.

Percussion yields very little information of definite value. Sir Clifford Allbutt mentions the fact that the percussion note and the percussion sense of resistance are decidedly woody in character. The fixation of the heart when this condition is present can be demonstrated by percussion as well as by palpation and inspection. On auscultation there is nothing characteristic. It has been said that an adherent pericardium may mimic every possible cardiac lesion. It must be borne in mind, however, that adherent pericardium is very frequently associated with valvular heart disease and that even if we know that the valvular heart lesion is present, it does not vitiate the diagnosis of adherent pericardium, as the etiology of the two conditions is frequently the same. An auscultatory sign frequently overlooked when present is that at times auscultation posteriorly under the angle of the scapula may demonstrate some alteration in the respiratory rhythm, the normal vesicular sounds heard there becoming bronchovesicular.

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[4] Laënnec wrote that Corvisart was in error when he stated that one cannot live and be healthy with complete and immediate adherence of the heart to the pericardium. "I am compelled to believe from the number of cases of this kind that I have met that the adherence of the heart to the pericardium does not often disturb the exercise of its functions" (Laënnec, R. T. H.: Traité de l'auscultation médiate et des maladies des poumons et du cœur, ed. 4, augmenteé par M. Andral, Paris, 1837, p. 381).

[5] Vaquez (Diseases of the Heart, Philadelphia, 1924, p. 227) writes that "if it seems exceptional in the aged, this is because it is scarcely compatible with long life."

[6] Riesman, D.: Pericarditis: Its Symptoms and Diagnosis, Am. J. M. Sc. **128**: 466 (Sept.) 1904.

[7] Regelsberger: Deutsches Arch. f. klin. Med. **147**: 129 (May) 1925.

[8] Katz, L. N., and Gauchat, H. W.: Observations on Pulsus Paradoxus, Arch. Int. Med. **33**: 371 (March) 1924.

In looking over the signs of adherent pericardium as described by authors many years ago, we made note of some interesting observations. Corvisart[9] avers that notwithstanding what has been said about the signs of an adherent pericardium, the diagnosis is extremely difficult to establish positively. He attaches particular value to the weakened impulse which is dull and low, obscure and abortive. Aran,[10] writing in 1844, noted a peculiar absence of the second sound of the apex which he considered to be a valuable diagnostic sign, and he noted also a flattening of the side of the chest as if drawn inward as another sign of some value. Potain,[11] in 1856, describes a throb which precedes the true impulse when there is adherent pericardium. Foster[12] lays great stress on the peculiarity of the impulse which produces very little movement of the chest wall, although this impulse is strong, decidedly obvious and considerably prolonged.

ROENTGENOLOGIC DIAGNOSIS

One of the roentgenologic diagnostic points considered of some moment by roentgenologists is the marked enlargement of the heart. This does not in any way, however, explain the cause of the enlargement of the heart. Various phenomena are produced by adhesions to various portions of the chest wall or of the diaphragm, such as tugging of the diaphragm, elevation of the diaphragm, and immobility of the heart.

ELECTROCARDIOGRAPHIC DIAGNOSIS

When there is fixation of the heart by extensive adhesions, it has been shown by Dieuaide[13] that there is a fixation of the electrical axis of the heart. Except for this phenomenon, there is no other positive phenomenon that we know of which can be shown by the electrocardiograph to be of value in diagnosing an adherent pericardium.

EXPERIMENTAL DATA

We have attempted to produce pericarditis in forty-two dogs. The technic employed in producing these lesions experimentally has varied. In the first six animals, tincture of iodine was injected into the pericardial cavity, but the dogs died almost immediately.[14] In the remaining dogs, in the first few we have used a staphylococcus antigen, which was found unsatisfactory, but finally we began to use permutit. This insoluble, inorganic preparation has been found most satisfactory on account of its mechanical irritant effects. Under intratracheal ether anesthesia, the pericardium is entered by cutting through the sternum and going then directly into the pericardial cavity with a fine hypodermic needle, and the permutit suspension is injected. None of the dogs that we have operated on have been killed, as we were anxious to study the long continued effect on the heart of adhesion of the epicardium to the pericardium and of adhesions from the pericardium to the chest wall. Twelve dogs have died of various causes. In three of these animals there was complete obliteration of the pericardinal cavity; in one of them there was partial obliteration of the cavity; in six, extensive fibrous bands from the pericardium to the anterior chest well, and in two, a purulent pericarditis. Both of the latter two animals died eight and six days, respectively, after operation. Dog 35, with complete obliteration of the cavity, died thirty-three days after operation. The other three dogs lived a shorter time. Dog 32, which had adhesions to the anterior chest wall, lived sixty-five days and is the only animal that lived a comparatively long period following operation except those which are living at the present time. Some of these animals are living some months now and are apparently well and healthy. Dog 35 weighed 6.4 Kg. His heart weight was 51 Gm., and the ratio of heart weight to body weight was 0.00796. This figure is approximately the same as the average heart weight-body weight ratio in a series of 200 normal dogs, in which it has been found to be 0.00798.[15] Dog 35, with partial obliteration of the sac, weighed 7.2 Kg. and his heart weight was 57 Gm.; that is, a heart weight-body weight ratio of 0.00792. These ratios in two animals show that in the relatively short time the animals lived after operation the pericardial involvement had had no effect on cardiac weight.

In our examination of experimental dogs we have been unable to detect any pathognomonic physical or other signs which might aid us in a diagnosis of adhesive pericarditis or mediastinal pericarditis. We have not been able to demonstrate any one or more conditions that would invariably indicate pericardial disease. Taking all the examinations together, however, certain signs being present in certain animals and other signs in others, we feel that we can recognize when pericardial disease is present in these experimental animals. We believe that when we have a sufficiently large series and have correlated the various results, we shall be able to point out those signs which are of greatest value in estimating pathologic disturbances of the pericardium.

SUMMARY AND CONCLUSIONS

1. It is generally agreed and is our observation that chronic pericarditis is rarely diagnosed ante mortem.
2. There are no pathognomonic signs of chronic pericarditis found in all cases of this disorder, but there are several signs which are occasionally present and which probably are indicative of chronic pericarditis.
3. Diagnosis of chronic pericarditis depends in part on the history of the patient, to which is added a thorough survey of the physical signs, and the electrocardiographic and roentgenologic examinations.
4. Experimental pericarditis in animals has not as yet yielded information that might point positively to evidence of pericardial disease.

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[9] Corvisart, J. N.: An Essay on the Organic Diseases and Lesions of the Heart and Great Vessels, translated by Jacob Gates, Philadelphia, 1812, p. 55.

[10] Aran, F. A.: Recherches sur les adhérences générale du péricarde, Arch. gén. de méd. **4**: 466 (April) 1844.

[11] Potain, P. C. E.: Adhérence du péricarde, triple bruit du cœur, impulsion diastolique, Bull. Soc. anat. de Paris **31**: 378 (Aug.) 1856.

[12] Foster, B.: Clinical Medicine, London, 1874, p. 283.

[13] Dieuaide, F. R.: The Electrocardiogram as an Aid in the Diagnosis of Adhesive Pericardial Mediastonitis, Arch. Int. Med. **35**: 362 (March) 1925.

[14] Musser, J. H., and Herrmann, G. R.: Sudden Death of Experimental Animals Following Intrapericardial Injections of Tincture of Iodine, Proc. Soc. Exper. Biol. & Med. **32**: 212, 1925.

[15] Herrmann, G. R.: Experimental Heart Disease, I, Methods of Dividing Hearts, with Sectional and Proportional Weights and Ratios for 200 Normal Dogs' Hearts, Am. Heart J. **1**: 213 (Dec.) 1925.

THE CLINICAL RECOGNITION OF PULSUS ALTERNANS *

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It is now an accepted fact that, in the absence of tachycardia, pulsus alternans in cardiac or cardiorenal disease indicates a grave prognosis. Lewis[1] says:

> Alternation of the pulse belongs to a small group of phenomena witnessed by those who attend the sick, which, treated as isolated signals, are in themselves emphatic and portentous. It ranks with subsultus tendinum, with optic neuritis, with the risus sardonicus, and other ill omened messengers It is the faint cry of an anguished and fast failing muscle, which, when it comes, all should strain to hear, for it is not long repeated. A few months, a few years at most, and the end comes.

A perusal of the literature is apt to convey the impression that pulsus alternans is uncommon and that a tracing of the radial pulse is necessary for its detection Vaquez[2] refers to it as "at once the rarest and the most serious of the arrhythmias." White[3] was the first to emphasize the fact that alternation of the pulse is relatively common. In taking radial pulse tracings from 300 patients with cardiac or cardiorenal disease in a period of eight months, he found seventy-one instances of alternation and seventy-one of auricular fibrillation, indicating that the conditions are about equally prevalent. Furthermore, alternation was found in 33 per cent of all patients showing any degree of cardiac decompensation from whom a radial pulse tracing was obtained (sixty-six of 201 cases). It is therefore apparent that alternation is frequent in patients with myocardial weakness.

Alternation of the pulse does not produce the striking physical signs that are found in auricular fibrillation, and it is due to this that it is so frequently overlooked Lewis states that most cases of pulsus alternans cannot be recognized without a tracing of the radial pulse Price[4] holds a similar view. The late Sir James Mackenzie,[5] who was the first to call attention to the grave prognostic significance of alternation, states that alternation "can frequently be made out when taking the blood pressure." In cases of constant alternation, it has long been known that there is often a difference in systolic pressure between the large and small waves, which can be detected by auscultation over the brachial artery or by palpation of the artery during estimation of the blood pressure

Another physical sign, which has been described in pulsus alternans, is a difference in the intensity of the heart sounds or in the pitch of a cardiac murmur. All who mention it are agreed that it is an uncommon sign. Mackenzie[6] says:

> As a rule, when pulsus alternans is present, there are no changes in the sounds of the heart, but occasionally I have found, when there was a musical murmur present at the aortic area, that this musical sound varied in intensity with the large and small beats.

Hart[7] observes:

> When murmurs are present (with alternation), they occasionally vary in intensity, but a change in heart sounds normal and pathological is far more characteristic of the extrasystolic irregularities and auricular fibrillation than it is of alternation.

According to Lewis,[1] a difference in the intensity of the heart sounds in alternation is inappreciable, while Norris and Landis[8] state that the sign is rarely demonstrable. In most monographs on the heart, it is not mentioned.

My attention was first called to alternation in the intensity and pitch of the sounds over the heart in examining a colored woman,[9] aged 33, in February, 1924. She had a marked chronic myocarditis with decompensation and a mitral insufficiency. On auscultation, the first sound at the apex was replaced by a harsh, rather high-pitched, blowing murmur, audible throughout the chest. At the apex, where the murmur was loudest, it was noted that *the pitch and intensity of the murmur varied with alternate heart beats,* suggesting the probability of pulsus alternans. Palpation of the radial artery revealed definite alternation in size in an otherwise regular pulse. With the blood pressure cuff on the arm, every second beat came through at a pressure of 180; all pulse waves were audible and palpable at 170. A tracing of the radial artery also showed pulsus alternans. An examination of the available literature then revealed the findings noted above. Encountering a second striking instance of alternation in the intensity and pitch of a heart murmur last summer led to a more careful examination of patients with cardiac disease with reference to this physical sign, and also to phenomena over the brachial artery.

In the last eight months, nineteen cases of constant alternation of the pulse have been observed, nine in the hospital wards and ten in consultation practice. Of these, seven (or 36.8 per cent) have had alternation in the intensity or pitch of the heart sounds or murmurs. In this small group of cases, a difference in the pitch of an apical systolic murmur was noted in four, in one of which there was also heard a difference in the intensity and pitch of alternate first tricuspid sounds. In one case, alternation in the intensity and pitch of the first sound at the apex was present, while the remaining patient had similar changes in the second pulmonic sound. It would appear, then, that alternation in the pitch of cardiac murmurs or alternation in the intensity and pitch of heart sounds may be found in a fairly large percentage of patients showing constant alternation of the pulse However, the sign has not been found in a sufficiently large proportion of patients to make it a very important sign of pulsus alternans.

In the same group of patients, the sounds over the brachial artery were studied carefully for deviations from the normal It is usually stated that alternation may be said to exist when only alternate pulse waves produce a sound over the radial artery (and a pulse at the wrist) at the systolic pressure, while all heart beats produce sounds and pulse waves when the pressure is lowered still further. This phenomenon was present in thirteen of the nineteen cases. Furthermore, it was noted that the intensity of alternate sounds over the brachial artery usually varied in intensity all the way to the diastolic pressure. In three patients, all pulse waves had the same systolic pressure, but the diastolic pressure of alternate beats varied. The limits of variation in systolic pressure were from 3 to 20 mm. of mercury, while the variations in diastolic pressure were 6 and 10 mm. in two cases, and not recorded in the third. All three patients with alternation in diastolic pressure had high pulse pressures; viz., 120, 74 and 90.

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* Read before the Section on Practice of Medicine at the Seventy Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926

[1] Lewis, Thomas: Disorders of the Heart Beat, ed 6, London, 1925, pp 115 et seq

[2] Vaquez, H Diseases of the Heart, American edition, Philadelphia, 1924, pp 564 et seq

[3] White, P D: Alternation of the Pulse: A Common Clinical Condition, Am J M Sc **150**: 82, 1915

[4] Price, F W: Cardiac Irregularities, Especially in Reference to Prognosis and Treatment, Brit M J **2**: 703 (Oct 18) 1924

[5] Mackenzie, James Diseases of the Heart, ed 4, London, 1925

[6] Mackenzie, James Principles in Diagnosis and Treatment in Heart Affections, London, 1916, p 154.

[7] Hart, T S · The Diagnosis and Treatment of Abnormalities of Myocardial Function, New York, 1917, p 188

[8] Norris, G W., and Landis, H R M · Diseases of the Chest, ed 3, Philadelphia, 1924, p 190

[9] Morris, R S · An Unusual Sign Associated with Pulsus Alternans, Cincinnati J. Med, June, 1924

The variation in the intensity of the sounds over the brachial artery was so striking in all the patients in whom alternation was shown either by blood pressure variation of alternate beats or by tracings of the radial pulse that this phenomenon was carefully sought in other patients. We have observed it in those who later developed typical pulsus alternans, and while we have no further proof of its relation to alteration,[10] we believe, from a study of the few cases thus far observed, that it will be found to be a valuable early clinical sign of pulsus alternans, and will thus be of aid in prognosis. We have not observed alternation in intensity of the sounds over the brachial artery in taking the blood pressure of patients with normal hearts. To detect the sign, the pressure should be lowered slowly while auscultating over the artery, attention being focused on the pitch and intensity of the sounds. At times, alternation will be audible for only part of the pressure range. Thus, in a patient who later developed constant alternation, with a blood pressure of 120 systolic and 74 diastolic, there was noted alternation in the intensity of the sounds between 120 and 100. Six days later, only alternate heart beats caused a sound at a pressure of 116, while all were audible at 110.

In our experience, auscultation has given more valuable information than palpation over the brachial artery, though with high pulse pressures palpation may give striking findings.

It has perhaps been noted that the observations recorded above are concerned only with patients in whom there was constant alternation. In White and Lunt's series of 129 cases of alternation, thirty-seven (or 29 per cent) showed constant alternation, and the remaining ninety-two patients showed alternation only after premature contractions. It is therefore evident that many cases of alternation have not been disclosed by the methods of examination we employed. Constant alternation has a graver prognostic significance than that which follows an extrasystole. Eight of our nineteen patients have died within nine months, and five more are known to be in a critical condition. A number of cases of alternation following premature contraction have been detected by means of auscultation of the heart and of the brachial artery, and we hope to report further on this subject in the future.

That auscultatory methods are subject to error is well known. The blood pressure findings which we look on as characteristic of pulsus alternans may be found in patients in whom the respiratory rate is one-half the pulse rate (easily determined) and also in those with bigeminal rhythm in whom the premature contractions are late and can be recognized only by graphic methods. But prognosis should never rest on one sign alone. Pulsus alternans in a slowly beating heart is very rare in the absence of other signs of weakening of the myocardium, such as breathlessness or precordial pain.

CONCLUSION

It is believed that more careful attention to detail in auscultation over the heart and over the brachial artery during blood pressure determination in patients with cardiac or cardiorenal disease will reveal many cases of pulsus alternans, and that prognosis will thereby become more accurate.

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[10] There are no constant, characteristic changes in the electrocardiographic record in patients with pulsus alternans, and White and Lunt (The Detection of Pulsus Alternans, J. A. M. A. **66**: *1383 [April 29] 1916*) have shown that differences in pressure of less than 6 mm. of mercury are not evident in the radial pulse tracing.

SUBACUTE BACTERIAL ENDOCARDITIS

A CLINICAL STUDY OF THIRTY CASES *

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There appears to be a renewal of interest in the subject of subacute bacterial endocarditis in recent years, probably because of the increase in the disease following the World War and the several severe pandemics of influenza of the last decade. A disease with an almost invariable fatal termination naturally provokes a further stimulus to renewed investigation regarding its treatment.

In presenting a clinical study of thirty cases of this disease observed during the last five years, and comparing it with the publications of other writers on the subject, it is quite evident that there is a general acceptance of the term *subacute bacterial endocarditis* as expressive of a disease entity comprising a definite group of clinical and pathologic findings.

The term was first used by Libman [1] in 1910, but earlier writers differentiated this particular type of endocarditis although not using the same designation.

The first comprehensive treatise on chronic endocarditis was that given by Osler in his Goulsonian lectures in 1885. In a contribution in 1908 he [2] gave a classic description of ten cases corresponding to the present conception of subacute bacterial endocarditis, which he had seen in the preceding twenty years, and remarked that he had not noted cases of this particular type at the time of his Goulstonian lectures.

In 1909, Horder [3] published an extensive review of microbic infective endocarditis, with an analysis of 150 cases observed during the preceding eight years, and in this collection were eighteen examples of the description regarded as typical of the subacute form.

The term endocarditis lenta has been used mostly by German and French writers. Schottmueller [4] reported five cases in 1910 under that heading. In more recent years a number of French clinicians have added further contributions, notably Roger,[5] Vaques,[6] Debré,[7] and Fiessinger and Janet,[8] usually under the title "endocarditis lenta."

In American literature the names of Billings,[9] Rosenow,[10] Kinsella,[11] and Libman [12] are most familiar in connection with this subject, and of these Libman has probably made as extensive contributions as are recorded anywhere.

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* Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Libman and Celler: Am. J. M. Sc. **140**: 516, 1910.
2. Osler: Quart. J. Med. **2**: 219, 1908-1909.
3. Horder, T. J.: Quart. J. Med. **2**: 289, 1908-1909.
4. Schottmueller, H.: München. med. Wchnschr. **62**: 617, 1909.
5. Roger, H.: Paris méd. **13**: 468, 1918
6. Vaques, H.: Bull. et mém. Soc. méd. de hôp. de Paris **3**: 1212, 1917.
7. Debré, R.: Revue de méd. **36**: 199 (March-April), 438, 508, 1919.
8. Fiessinger and Janet: Bull. et mém. Soc. méd. d. hôp. de Paris, 1918, p. 159.
9. Billings, Frank: Chronic Infectious Endocarditis, Arch. Int. Med. **4**: 409 (Nov.) 1909.
10. Rosenow: J. Infect. Dis. **6**: 245, 1909.
11. Kinsella, R. A.: Streptococcus Endocarditis, Arch. Int. Med. **19**: 367 (March) 1917.
12. Libman: Am. J. M. Sc. **163**: 313, 1912.

The careful pathologic studies of Clawson[13] and a recent comprehensive review of the entire subject by Blumer[14] have stimulated further interest in this form of endocarditis.

All writers are in agreement that differentiation should be made from the following three types:

1. Endocarditis that accompanies acute or subacute rheumatism. (Whatever the causative micro-organism of acute rheumatism may prove to be, it is generally agreed that the vegetations of rheumatic endocarditis and the blood stream are bacteria free, which is quite different from the disease under discussion.)
2. Endocarditis often termed "acute ulcerative or acute malignant," which is but one part of an acute pyemia, the heart affection being secondary to, rather than responsible for, the systemic septicemia. The clinical course is quite different, the duration of the disease varying from a few days (fulminating type) to a few weeks, and the infective micro-organisms are much more virulent.
3. That form of endocarditis occurring as a terminal event in chronic disease, which is more often latent and recognized only at necropsy.

In classifying bacterial endocarditis, the term acute should be applied to those cases in which the clinical course does not extend beyond six or eight weeks; subacute, to those in which the course is protracted beyond three months or longer.

The subject premits of discussion under the four headings: (1) etiologic significance of a preexisting valve lesion; (2) types of infection and infective foci; (3) characteristic clinical picture, and (4) prognosis and treatment.

ETIOLOGIC SIGNIFICANCE OF A PREEXISTING VALVE LESION

That a preexisting valve lesion is essential for the production of this form of endocarditis is evident from the history of all recorded cases. The chronically injured valve seems to constitute a predisposing site on which the new infection is engrafted. In many instances the patients are not aware of a previous heart affection. As this is almost exclusively a disease of adult life, it is the valves of the left side of the heart that are chiefly involved. In our series of thirty cases, the mitral valve was involved in twenty-two, the aortic in seven, and in one case the lesion was of congenital nature. In the recorded cases the aortic valve is more frequently the site of previous infection than the mitral. A tricuspid and a pulmonary valve infection have been noted in a few instances. In a limited number of cases, as in one of ours, the primary valvular or cardiac defect has been of congenital origin. The previous disease producing the original valvular affection has in more than one half of the recorded cases been an acute or subacute rheumatic infection. Twenty of the patients in our series gave a previous history of acute rheumatism. Syphilis and scarlet fever and other infections are less frequent, while arteriosclerosis is rare as a basic lesion. Since the World War, trench fever, gonorrhea and influenza have assumed greater importance in causative influence. Seven of our patients were ex-soldiers.

The disease seems to be incident to the period of adolesence and young adult life, occurring during the time of greatest incidence of valvular heart disease from all causes, excluding syphilis and arteriosclerosis. In our thirty cases there were sixteen males and fourteen females, which corresponds to the statictics published by Osler and Blumer, giving the proportions as males, 60 per cent and females, 40 per cent.

Between the production of the original valve lesion and the later reinfection there is often an interval of several or many years of good health. To what extent the rheumatic history or the preexisting valve lesion itself produces a predisposition to subsequent infection or subacute bacterial endocarditis is a problem still unsolved.

In this connection, attention should be directed to the interesting study of Lewis and Grant[15] on the influence of congenitally bicuspid aortic valves (regarded by them as malformation) on subsequent subacute bacterial endocarditis. In a series of thirty-one cases of this form of endocarditis, they found at necropsy in eight cases a congenitally bicuspid condition of the aortic valve. They conclude that this malformation has a determining cause in rendering these valves more susceptible to subsequent infection of mildly virulent bacteria.

TYPES OF INFECTION AND INFECTIVE FOCI

The types of infection noted in a great majority of the cases recorded are concerned mainly with two micro-organisms, the one belonging to the streptococcus group, and the other the influenza bacillus. Libman and others have reported that the micro-organism isolated from the blood stream in from 90 to 95 per cent of the cases is a nonhemolytic streptococcus often referred to as *Streptococcus viridans*, while *Bacillus influenzae* and occasionally other organisms are found in the remaining 5 or 10 per cent.

Miller and Branch[16] have reported a typical case of subacute bacterial endocarditis in which the infective agent was a hemolytic hemophilic bacillus. This organism is closely related to the influenza bacilli, differing from them in their ability to hemolyze red cells.

The causative micro-organism in all instances has the common characteristic of low virulence with no tendency, even in its embolic manifestations, to pyogenic effects. That a micro-organism of low virulence can produce such a severe systemic disturbance is one of the problems peculiar to this disease.

Frequent observers have noted that the blood stream is often bacteria free for long periods, which fact has sometimes occasioned confusion in diagnosis. Gow[17] expresses it in the opinion that a positive culture finding is of great diagnostic importance while a negative result is conversely of little import.

CHARACTERISTIC CLINICAL PICTURE

Although the clinical course often extends over a period of one to two years with remissions and considerable variation of symptoms, nevertheless there is a definite adherence to a distinctive clinical picture. The onset as a rule is insidious in nature, which makes it difficult often to determine just when the disease begins, this being equally true of the hospital patient, who usually does not come under observation until late in the disease, as well as the private patient who is in close contact with his physician. This initial or onset period probably represents a shorter or longer state of bacteremia, and is a part of the accompanying general toxic condition. This onset period is characterized by a feeling of lassitude, vague pains, loss of appetite, chilliness, vertigo, headache, cough, and less often symptoms indicating a heart affection.

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[13] Clawson, B. J.: Endocarditis, Arch. Int. Med. **33**: 157 (Feb.) 1924.

[14] Blumer, G.: Medicine **2**: 105 (May) 1923.

[15] Lewis, T., and Grant, R. T.: Heart **10**: 21 (April) 1923.

[16] Miller, C. P., and Branch, A.: Subacute Bacterial Endocarditis Due to Hemolytic Hemophilic Bacillus, Arch. Int. Med. **32**: 911 (Dec.) 1923.

[17] Gow, A. E.: Brit. Med. Jour. **2**: 307, 1920.

While the prominent feature in all the cases is the protracted fever, yet, because of the insidious onset, it is not improbable that patients go about during this early stage attending to their regular duties and do not realize that they have fever or are otherwise particularly sick.

Subacute Bacterial Endocarditis

No.	Onset	Age and Sex*	Previous Infection	Valve Affected	Reinfection	Blood Culture	Duration of Illness (Fever Course)	Enlarged Spleen	Osler's Nodes	Petechiae	Embolism	Acute Glomerular Nephritis	Termination
1	July, 1921	29, ♂	Rheumatism, 1911	Mitral; aortic	Influenza	Positive, 3 plus; Streptococcus viridans	22 weeks	Plus	Plus	Plus	Plus cerebral	Plus	Cardiac death, Dec., 1921
2	Aug., 1921	62, ♂	Rheumatism	Mitral	Cholecystitis	Positive, 2 plus; Streptococcus viridans	14 weeks	Plus	—	Plus	—	Plus	Death, Dec., 1921
3	April, 1921	34, ♀	Rheumatism, 1905	Mitral	Salpingitis	Positive, 2 plus; Streptococcus viridans	20 weeks	Plus	Plus	Plus	—	Plus	Sept., 1921
4	June, 1921	56, ♀	Rheumatism, 1892	Mitral	Influenza	Negative	14 weeks	Plus	Plus	Plus	—	Plus	Sept., 1921
5	May, 1921	60, ♀	Rheumatism, 1881	Mitral	Influenza	Positive	22 weeks	Plus	Plue	Plus	—	Plus	Cardiac, Oct., 1921
6	Aug., 1921	23, ♀	Congenital	Patent ductus arteriosus	Influenza	Positive, 2 plus; streptococcus	24 weeks	Plus	Plus	Plus	—	Slight	Discharged, March, 1922; fever free; bacteria free
7	Dec., 1921	43, ♂	Rheumatism, 1901	Mitral	Influenza	Positive, 3 plus; streptococcus	16 weeks	Plus	Plus	Plus	Cerebral	Plus	Death, March, 1922
8	Nov., 1921	53, ♂	Rheumatism, 1894	Mitral	Enteritis	Positive, 1 plus; streptococcus	18 weeks	Plus	Plus	Plus	—	Plus	Death, March, 1922
9	Nov., 1921	37, ♀	Scarlet fever, 1891	Mitral	Influenza	Positive, 2 plus; streptococcus	32 weeks	Plus	Plus	Plus	—	Plus	Death, July, 1922
10	Dec., 1921	17, ♀	Rheumatism, 1915	Mitral	Influenza	....	35 weeks	Plus	Plus	Plus	—	Plus	Aug., 1922
11	Jan., 1922	63, ♂	Rheumatism, 1880	Mitral	Pyelitis	Positive, 1 plus	14 weeks	Plus	—	Plus	Cerebral	Plus	Sept., 1922
12	April, 1922	18, ♂	Influenza, 1921	Mitral	Influenza	Positive; streptococcus	25 weeks	Plus	Plus	—	—	Plus	Sept., 1922
13	March, 1923	15, ♀	Rheumatism, 1921	Aortic	Enteritis	Positive, 2 plus	60 weeks	Plus	Plus	Plus	—	Plus	Oct., 1922
14	Nov., 1922	51, ♂	Rheumatism, 1912	Mitral	Influenza	Positive, 1 plus	40 weeks	Plus	Plus	Plus	—	Plus	Aug., 1924
15	Feb., 1923	27, ♂	Rheumatism, 1918	Aortic	Influenza	Positive, 2 plus	58 weeks	Plus	Plus	Plus	Cerebral nasal	Plus	April, 1924
16	Aug., 1923	27, ♀	Rheumatism, 1908	Mitral	Influenza	Positive, 2 plus	18 weeks	Plus	—	Plus	—	Plus	Dec., 1923
17	Aug., 1923	41, ♀	Rheumatism, 1902	Mitral	Actue respiratory infection	Positive, 1 plus	17 weeks	Plus	Plus	Plus	—	Plus	Aug., 1924
18	Dec., 1923	25, ♂	Rheumatism, 1906	Mitral	Influenza	Positive, 1 plus	20 weeks	Plus	Plus	Plus	—	Plus	April, 1924
19	May, 1924	27, ♂	Rheumatism, 1918	Mitral	Influenza	Positive, 1 plus	14 weeks	Plus	Plus	—	—	Plus	Aug., 1924
20	April, 1924	44, ♂	Scarlet fever, 1896	Mitral	Influenza	Positive, 1 plus	32 weeks	Plus	Plus	Plus	—	Plus	Jan., 1925
21	Jan., 1924	41, ♂	Measles, 1903	Mitral	Influenza	Positive, 1 plus?	40 weeks	Plus	Plus	Plus	Cerebral	Plus	Nov., 1923
22	Feb., 1925	26, ♂	Influenza, 1918	Aortic	Influenza	Positive ?	22 weeks	Plus	Plus	Plus	—	Plus	Alive
23	March, 1925	11, ♀	Chorea, 1921	Mitral	Acute arthritis; rheumatism	Negative	30 weeks	Plus	Plus	Plus	—	Plus	Alive
24	April, 1925	26, ♀	Rheumatism, 1909	Mitral	Influenza	Positive, 2 plus	25 weeks	Plus	—	Plus	—	Plus	Death, Oct., 1925
25	Feb., 1925	37, ♂	Scarlet fever, 1918	Aortic	Influenza	Positive, 1 plus	30 weeks	Plus	Plus	Plus	—	Plus	Death, Oct., 1925
26	Aug., 1925	34, ♂	Rheumatism, 1918	Mitral	Influenza	Positive, 1 plus	26 weeks	Plus	Plus	Plus	—	Plus	Death, Jan., 1926
27	Aug., 1925	62, ♂	Rheumatism, 1913	Aortic	Influenza	Positive, 1 plus	30 weeks	Plus	Plus	Plus	Cerebral	Plus	Alive
28	Nov., 1925	30, ♀	Rheumatism, 1909	Aortic	Influenza	Positive, 1 plus	22 weeks	Plus	Plus	—	—	Plus	Alive
29	Oct., 1925	22, ♀	Influenza, 1918	Mitral	Cholecystitis	Positive, 1 plus	22 weeks	Plus	Plus	Plus	—	Plus	Alive
30	Nov., 1925	12, ♀	Tonsillitis, 1918	Mitral	Tonsillitis	Positive, plus	24 weeks	Plus	Plus	—	—	Plus	Alive

* In this column, ♂ indicates male; ♀, female.

It is during the early stage that the thought of tuberculosis, subacute rhemuatism, mild sepsis, malaria or typhoid infection is often considered.

The main clinical symptoms may be associated with two periods or stages of the disease: (1) an early period in which the signs and symptoms are those of a low grade infection, and (2) a later period when the manifestations of embolism hold the prominent place.

The early period, being expressive of a low grade infection, explains the symptoms of fever, anemia, exhaustion and enlarged spleen. The symptoms of the later period are due to the endocarditic changes, and the breaking off of particles from the affected valves and mural endocardium, producing such symptoms as petechiae, tender cutaneous nodes, clubbing of the fingers, vascular embolism, purpura and renal phenomena, while definite cardiac symptoms are singularly rare.

Fever is a constant phenomenon of this disease, but rather distinctly variable in its course. At times it is irregularly intermittent, again intermittent, and in some instances there is little or no fever. It often appears in waves, remaining at from 103 to 104 F. for weeks at a time, and then toward the end of the illness it may be absent entirely for several weeks. Chills and sweating are frequently noted during the early period of the disease, but they are encountered also during the later stages.

The fever is modified by other symptoms or complications occurring during the course of the illness; viz., a distinct rise occurs with the appearance of the clinical signs of renal disease; the development of embolic phenomena and splenic infarction produce a similar sharp rise of temperature, with a chill occasionally preceding it.

Different forms of therapy influence the fever course, such as the intravenous injection of physiologic sodium chloride solution, of drugs such as sodium cacodylate, and blood transfusions; these may all produce a sudden rise of fever; again, they may be followed by a drop in temperature to the normal for a short period, arousing a false hope as to the efficacy of the therapeutic remedy.

Splenic enlargement is a common symptom, occurring in all our cases; the palpable spleen is regarded as an early distinctive sign of this septicemic condition.

Anemia and blood changes are a constant feature, but vary greatly in nature. The anemia is usually of the secondary anemia type; and while the reduction in hemoglobin and erythrocytes is often very marked, the true blood picture of pernicious anemia rarely develops. The leukocytes may be normal in numbers, and again increased or below the normal. Where leukopenia occurs the lymphocytes are proportionately increased, while in the cases with leukocytosis the polymorphonuclears usually predominate.

The general pallor and particularly the pallor of the face is a striking feature, to which is added a tired look and later a pigmentation, giving to the face a brownish tinge, usually referred to as "café au lait."

Cutaneous changes are particularly characteristic of the embolic phenomena, and are easily of greatest diagnostic importance. These appear usually as changes in color, the appearance of petechiae, erythematous rashes, purpura and painful cutaneous nodules. The café au lait color of the face has been referred to. Purpura and erythematous eruptions, frequently seen in severe types of septicemia, are comparatively rare in this disease. Petechiae are a more important symptom, noted in twenty-six of our series, and found present in 80 per cent of all recorded cases. They are usually discretely distributed and become more extensive only during the terminal stage of the illness. These petechiae are usually of short duration, and as they fade leave a yellowish brown stain.

By far the most interesting of the skin phenomena are the tender or painful nodes first described by Osler, and often referred to as Osler's nodes, being seen in 50 per cent of recorded cases. Twenty-five of our thirty cases presented this symptom. According to Osler's first description, these nodes appear at intervals, more frequently on the tips of the fingers, also on the pads of the fingers and toes, consisting of slightly swollen areas, varying in size from that of petechiae to 1.5 cm. in diameter, of vivid pink hue with slightly opaque centers. They are distinctly painful, particularly to the touch. They are not hemorrhagic, and the area is not pigmented after they disappear. The best explanation offered is that they are caused by the lodgment of minute emboli near the skin.

The French writers refer to this phenomenon as the "signe des doigts."

It is a common remark of the patient at the morning visit, "Doctor, there is a new tender red spot on my finger or toe (as the case may be) this morning."

These principal cutaneous phenomena are to be distinguished from the lesions on the palms of the hands, inner sides of the wrists and toes of the feet, found in the more acute forms of endocarditis.

Clubbing of the fingers is another interesting symptom, and is probably frequently misinterpreted because of its relation to chronic valvular disease and congenital heart affections. The finger tips differ from those seen in congenital heart disease, in being pale and showing no venous stasis.

Vascular embolism, aside from the embolic phenomena associated with certain skin lesions, constitutes another of the principal clinical features of this disease. It occurs either as pure embolism or embolic aneurysms, and affects the cerebral, nasal, mesenteric and pulmonary arteries, and those of the extremities. Aphasia, partial or complete hemiplegia, peripheral arterial obstruction of the extremities, mesenteric embolism with severe intestinal bleeding, and perforated nasal septum were some of the results of vascular embolism noted in our cases. The splenic infarctions so frequently seen in this disease, as well as the terminal glomerular nephritis, are further expressions of embolism.

While pain is a frequent accompaniment of the various embolic phenomena peculiar to subacute bacterial endocarditis, there are a number of other painful symptoms that seem to feature this disease. Libman, in 1910, first noted a tenderness over the lower end of the sternum. This is often manifest before anemia is established, so that it is not necessarily a feature of the anemia. Pain may be felt in other bones, as the sacrum and ischium. These pains are often indefinite, and only occasionally are localized in any particular bone or joint. Vague arthritic pains are common to the early period of the disease, and an arthralgic type has been considered by some writers. Headache is a frequent symptom, and this with the other painful symptoms may be regarded as expressions of the general septicemia, rather than of a localized infection.

Embolic glomerular nephritis was first described by Löhlein,[18] as common to subacute bacterial endocarditis, in 1910. The later extensive studies of Gaskell[19] and Baehr[20] have emphasized its occurrence as a characteristic of this disease, and as such usually a part of the later period of the illness. The focal embolic glomerular lesions are accompanied by no clinical evidences of renal disturbance beyond a microscopic hematuria and slight or transient albuminuria. An albuminuria is occasionally noted during the early fever period; then later with the daily examinations, red and white blood cells appear in the sediment, and later as the albuminuria becomes more marked, hyaline and granular casts are usually present. These urine findings are as a rule indicative of a later period of the disease, and generally of unfavorable prognostic significance.

Cardiac symptoms, except for their fundamental significance, are among the least prominent of all. The presence of an existing valve lesion is helpful in determining the diagnosis of the disease under discussion, but it is very unusual for any new endocardial murmurs to develop in the course of the disease, yet the murmurs may become louder and vary otherwise during the illness. Tachycardia may develop with the increase of fever and general septicemia. Arrhythmia and other pulse changes are rare. Special electrocardiographic changes have not been noted. Pericarditis is rare, and signs of myocardial insufficiency are not manifest usually until the later stages of the illness.

As these various symptoms develop to complete the clinical picture, covering often a period of weeks and months, the patients for a long time do not appear seriously ill, and it becomes a hard matter to keep them confined to bed, because they can see no good reason for it.

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[18] Löhlein: Med. Klin. **6**: 375, 1910.

[19] Gaskell: J. Path. & Bact. **16**: 287, 1911-1912.

[20] Baehr, George: Significance of Embolic Glomerular Lesions of Subacute Streptococcus Endocarditis, Arch. Int. Med. **17**: 262-264 (Feb.) 1921.

The patient usually succumbs as a result of the progressive anemia and exhaustion incident to the continued septicemia, plus the development of such complications as embolism, particularly intercerebral, with cardiac failure and disturbed renal function, so that pulmonary and visceral congestion, with uremia and coma, frequently closes the scene.

The pathologic anatomic changes noted at necropsy are a further criterion that we are dealing with a characteristic disease process different from other forms of endocarditis. All writers agree that, aside from the changes incident to the preexisting valve lesion, there is a tendency in aortic lesions for the process to extend downward and involve the wall of the left ventricle, and in mitral affections a similar extension on to the wall of the auricle with involvement of the chordae tendineae. The changes indicating mural endocarditis are often more marked than those on the valve surfaces.

PROGNOSIS AND TREATMENT

The importance of the prognostic point of view in this condition is to be strongly emphasized. Almost all *these cases appear mildly innocent at the onset, and* there is a strong temptation to regard them lightly and promise a speedy recovery, yet death is the usual termination. One can hardly conceive a more trying moment for the attending physician or consultant than to be asked for an opinion regarding the outcome for a patient presenting the clinical picture of this disease, who at the time may not appear seriously ill. It becomes even more tragic when one realizes one's inability to propose any curative measure of treatment.

There are a comparatively small number of recoveries reported. In a series of nearly 300 cases reported by Libman, there are four recoveries. Sir Thomas J. Horder reports the same number in his series. Billings has seen two or three apparently get well. In our group there is one patient who has been fever and bacteria free for three years, so that a recovery may be considered. There is another one who has been free from fever and other clinical symptoms for a period of six months, which permits a hope of ultimate recovery.

This is a disease that is liable to distinct remissions of improvement. The fact that the blood stream is often bacteria free for long periods is suggestive of a remission stage, although cases have been reported in which the patient succumbed to exhaustion and embolic complications after the fever had subsided and the blood was bacteria free.

Another feature to be considered in venturing a prognostic opinion is that well marked healing changes have been observed post mortem in the affected valves and the mural endocardium. This was first reported by Libman and fully corroborated by other observers, affording definite evidence that a healing of the affected area does occur. In one of our cases the necropsy revealed a distinctly healed area on the mural endocardium which could be related to a ten weeks' course of fever experienced three years prior to the last illness. The remissions of improvement and occasional recoveries are best explained by the aforementioned tendency to healing in the affected endocardial areas.

Since this is distinctly an infective process, and in many instances due to a particular micro-organism, it is natural that some form of immunotherapy has been given a prominent place in the different forms of treatment proposed. Unfortunately, the different forms of vaccine treatment have not given any appreciable results. It has been proposed that the transfusion donor be primarily immunized with a causative streptococcus before the blood transfusion is made, but no extensive results have as yet been reported regarding any such methods.

Chemotherapy includes the use of a large number of drugs, principally the colloidal metals, collargol, arsenic derivaties, quinine and salicylates, with the recent additions of neutral acriflavine, mercurochrome-220 soluble and gentian violet.

Intravenous injections of large doses of sodium cacodylate is the form of therapy that has been used principally in the group of cases comprising our series, including the two instances of apparent recovery.

The two reasons generally given for the use of arsenic in this form of septicemia are: (1) It is known that arsenic is retained for a long period in the serum and other body fluids; and (2) laboratory demonstrations indicate that the growth of low virulent streptococci are rapidly inhibited by weak arsenical solutions.

The results with this remedy reported by Capps are interesting. In a series of eight cases there are four recoveries, one patient being well after eleven years, two after five and a half years, and one two and a half years after completing the treatment.

Transfusions of blood have been employed in our series, principally in the cases with a low percentage of hemoglobin. An improvement in the blood state was noted, and in a few instances a disappearance of bacteria from the blood stream for a short period.

A successful or specific form of therapy is still to be developed. Since the most frequent causative infective agent is a nonhemolytic strain of streptococcus, it does not seem improbable that a specific antibacterial or antitoxic serum may be produced. Possibly the production of a special bacteriophage may finally solve the problem.

In the meantime, in view of the great mortality of the disease, preventive measures for which Sir Thomas Horder made such a strong plea in his paper in 1909 should receive prominent consideration. If it were possible to prevent acute rheumatism, most of these cases would not occur in the first place.

The tendency to attack children and young adults, and particularly individuals with valvular heart disease, again emphasizes the great rôle of prophylactic measures. This clearly indicates that all such persons should be rid of every ascertainable focal infection. Furthermore, the need of keeping vitality at its best, developing immunity in every possible way, and the prevention of acute infections should always be borne in mind.

Careful attention to these facts in hospital and dispensary services, in special cardiac clinics, and in private practice will do much to bring this disease under better control.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KILGORE; MUSSER AND HERMANN; MORRIS, AND BIERRING

Dr. Willard J. Stone, Pasadena, Calif.: In our cases of cardiac pain, covering a period of twenty years, the patient's average age has exceeded 50 years. A number of terms have appeared in the literature, such as vasomotor angina, stenocardia, status anginosus anginal crises, pseudo-angina, angina minor and angina major, which have confused clinicians. The cases largely fall into three types. First, the type producing aortic or effort pain, or the angina of Allbutt. This type differs clinically from the coronary angina of Heberden, and from the type of pain produced by coronary occlusion. The aortic type of pain is brought on by exertion. It is located beneath the upper sternum. It differs from the angina of Heberden in that it is relieved, as a rule, by cessation of effort. It results from degenerative changes in the aorta affecting elasticity. Radiation to the neck or shoulder occurs in fully as large a percentage of cases as in the coronary type. The important thing about the aortic type of angina is that the outlook is distinctly more favorable. In the coronary type, the onset is sudden but of very short duration. It is accompanied by apprehension such as is seen in few other cardiac conditions. It is accompanied by a viselike constriction of the chest, and, as rule, can be differentiated from the aortic type in that it is not dependent on effort. Radiation of pain frequently occurs in the coronary type and is referred to the shoulder and down the inner side of the arm. But the pain, instead of being located by most patients as beneath the upper portion of the sternum, is frequently located in the epigastrium. In my experience, the coronary type of angina precedes in many instances the coronary occlusion that follows. I did not hear Dr. Musser refer to the sign of Wenckebach, sometimes called Keith's sign, in the diagnosis of chronic adhesive pericarditis. Under normal conditions of inspiratory effort, the anteroposterior diameter of the chest moves more than the lateral. With adhesion to the chest wall, the lateral expansion of the chest under deep inspiration may be greater than the anteroposterior expansion. Likewise, under normal conditions of deep inspiratory effort, protrusion of the epigastrium occurs. With adhesions to the chest wall, retraction of the epigastrium rather than protrusion may occur. In 1919, I reported a series of 300 necropsies on patients who died of pneumonia, in which occurred seventy-two instances of pericarditis. They were, in many instances at least, partly responsible for death.

Dr. Joseph L. Miller, Chicago: Precordial pain is a subject on which there is considerable confusion, especially in classification. Until about fifteen years ago we had two types of endocarditis—rheumatic and septic, or malignant. Then appeared the classification of rheumatic, subacute bacterial and septic endocarditis. The subacute bacterial endocarditis apparently includes a variety of cases in which there may be a great difference in the symptomatology and prognosis. The present tendency to consider all cases of subacute bacterial endocarditis as having a bad prognosis is not correct. We have mild cases of subacute bacterial endocarditis, not rheumatic in origin, in which *Streptococcus viridans* is found. Most of these cases arise on old lesions. The course of the disease may be rather mild. Chills may be entirely absent. Petechiae or embolic phenomena, such as hemiplegia, or blood in the urine, appear occasionally. To secure positive blood cultures requires a good deal of skill, and yet *Streptococcus viridans* is present. At present this group is classed with the subacute bacterial endocarditis cases. They are, however, much less virulent in character than the ordinary subacute bacterial endocarditis, and many of these patients recover without any special treatment. Where these symptoms approach those of a septic endocarditis, chills, fever, etc., the prognosis is very bad, but there is a form of subacute bacterial endocarditis with positive cultures in which the prognosis is not necessarily bad.

Dr. James McLester, Birmingham, Ala.: Through painstaking clinical observation, a thing that is becoming unfortunately rare, Dr. Morris has called attention to a sign, the existence of which many of the older writers have denied; that is, a change in the tone or pitch of the heart murmur occurring in alternation. Logically, this is what we should expect, because there is at the same time a change in the force of the systole that produces this murmur. Alternation presents a very interesting problem. Every alternate wave is small, but the pulse time is the same. This evidently signifies that there is a defect in the force of the ventricular systole, and from the septic endocarditis. Cases in this intermediate group do not begin with rheumatism, nor do they show petechiae or violent chills. It is not strikingly septic endocarditis. There has been a great deal of confusion lately in reporting large numbers of cases of subacute bacterial endocarditis. It depends on what one keeps in the group and how much one pushes over into the group of septic endocarditis. If one retains in the group what I think should be called subacute endocarditis only those cases belonging there and puts over into the septic endocarditis group those cases that show septic symptoms, then I think one will have a large number of recoveries. I have not seen many cases in the last years, but after the war we had eight cases in two years which we placed in this group, all with *Streptococcus viridans*. We did not call any of these cases septic endocarditis. They were not acute rheumatic endocarditis. Four of the eight patients recovered. In Toronto, fourteen patients were reported as recovered. I cannot help but think that Dr. Bierring has put into that class of endocarditis a lot of cases that properly are septic endocarditis, because I cannot understand how he gets such a high mortality. The only point in which I differ with Dr. Bierring is that what we call septic endocarditis he calls subacute endocarditis.

Dr. Lewellys F. Barker, Baltimore: Of more than fifty patients with viridans endocarditis with positive blood cultures that I have seen, every one is dead. The only patient that I have ever seen recover after a positive culture of *Streptococcus viridans* had been obtained from the blood was a patient who had a radical antrum operation; immediately after the operation he had fever and the positive blood culture was obtained, but no signs of endocarditis developed. In a view days, he was quite well again and *Streptococcus viridans* had disappeared from the blood. It would seem certain, however, that some patients with true viridans endocarditis do recover. Dr. Libman's experience has proved this, but a fortunate outcome must be very rare. Dr. Miller has referred to another group of cases in which he saw four recoveries out of eight. I understand that there have been reports from Canadian observers and English observers of similar experience; the patients were younger persons with endocarditis, and *Streptococcus viridans* was grown from the blood. My belief is that there must be two groups of cases —a "severe" group and a "mild" group. Possibly the mild, favorable cases are limited in their geographic distribution; or possibly there are strains of varying virulence. It is rather strange that Dr. Bierring in his experience and we in our experience in Baltimore have not encountered the "mild" group. I believe that the "mild" group exists, for the men who have reported the cases are reliable workers. But the strange discrepancy remains to be explained.

Dr. Meyer Rabinowitz, Brooklyn: In regard to the pain in the angina pectoris, a great deal will depend on the sensitiveness of the person to respond to pain stimuli. Hyposensitive patients may die without any manifestation of pain, and at necropsy reveal the lesions that go with the disease. Patients with *Streptococcus viridans* infection who have recovered have not had any embolic manifestations. It is important in the differential diagnosis between acute rheumatic and subacute bacterial endocarditis to investigate the urine for red blood cells. The frequent finding of red blood cells in the urine speaks for subacute bacterial endocarditis. Another point brought out by Dr. Libman may be the inability to flex the patient's head on the chest, because of meningism occurring in subacute bacterial endocarditis. This does not occur in acute rheumatic manifestations, except with acute rheumatic cervical spondylitis.

Dr. W. L. Bierring, Des Moines, Iowa: If we recognize that there is a typical clinical history characteristic of this form of endocarditis, there should be no difficulty about the classification. There may be some variance as to the use of the term "subacute," since these cases often have a prolonged course, so that the term "chronic" may seem more appropriate. If we adhere to the definite clinical picture, with its embolic phenomena, the usual occurrence in the blood stream of a nonhemolytic strain of streptococcus or other micro-organism of similar low virulence, and the history of a preexisting valve lesion, we are justified in recognizing this as a special disease entity. Of the thirty patients in this series, twenty-seven had a positive culture at one time or another during the course of the illness. A large number of them were under personal observation during the major part of the illness. There is one patient living, aged 11 years, who has been twelve months in the hospital with a continued fever during all of that time, and is now succumbing to heart failure. The records of reported cases indicate only a limited number of recoveries. Dr. Libman, in 300 cases, has seen only four recoveries. In a series of 189 cases reported by Sir Thomas Horder in 1922, there were four recoveries. Among our series we have one patient who has been bacteria-free and fever-free during the last three years. Another has been fever-free for six months. There are five patients in the series still living who have been ill for periods varying from twenty-two to fifty weeks, yet it does not seem likely that any of them will recover. The first patient in the series was a young man, seen during the primary rheumatic infection in 1911. He recovered from the acute rheumatism, but had an aortic insufficiency as the result. Six years later he passed through a ten weeks' course of fever, with a positive blood culture, and a diagnosis of subacute bacterial endocarditis was rendered. He recovered from this and was apparently well for about three years, when he developed the final attack of subacute bacterial endocarditis, being ill for a period of twenty-two weeks. At the necropsy there were definite healed areas on the mural endocardium, which were evidently connected with the period of infection sustained three years previously. It appears well established that such a healing process does occur in a limited number of cases, and these no doubt explain most of the so-called cures.

Dr. John H. Musser, New Orleans: Dr. Stone spoke about the importance of pneumonia as a cause of pericarditis. I might say that in 304 cases pneumonia was responsible for the greatest number of pericardial lesions.

TREATMENT OF PERNICIOUS ANEMIA BY A SPECIAL DIET*

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AND
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BOSTON

This paper concerns the treatment in a series of forty-five cases of pernicious anemia in which the patients were given a special form of diet. While the problem of diet in the treatment of pernicious anemia is by no means new, in our opinion its possible importance has not heretofore been generally recognized. In 1863, seven years after the publication of Addison's second, but best known, description of the disease now called pernicious anemia, Habershon[1] wrote concerning this condition: "Many patients at an early stage completely recover under the influence of bracing air and a nutrient and stimulating diet." Other early investigators of the disease, as Biermer[2] in 1872, and Pepper,[3] in 1875, appreciated the desirability of prescribing easily digested foods as a form of medication, but no greater emphasis was placed on the value of diet. Osler,[4] however, in 1885, mentioned that "cases [of pernicious anemia] appear to have got well with change of air and a better diet after resisting all ordinary means."

During the last half century, many clinicians, following the suggestions of the pioneer writers on the subject of pernicious anemia, have advised various kinds of diet as an aid to induce a remission of the disease. More often than not, the recommendations have been of a general sort as might be given for many persons with an impaired condition of the gastro-intestinal tract, which always is present in pernicious anemia. Thus, food for the pernicious anemia patient often has been selected because it appeared to be easily digested or because it seemed particularly nutritious and strength-giving. Rarely, diets have been chosen for some assumed direct effect on the blood.

The constant presence of achylia gastrica in pernicious anemia and the frequency of an abnormal bacterial activity within the intestines have been two main reasons for establishing certain forms of dietotherapy in the disease. On these accounts, Fenwick,[5] in 1880, and Naegeli,[6] among others, recommended diets relatively sparing in farinaceous foods and relatively rich in protein. For similar reasons, yet in contrast to the majority, Hunter,[7] in 1890, and others have advised quite the opposite type of diet. Grawitz[8] recommended a diet composed chiefly of fresh vegetables, followed by one with generous amounts of protein. The idea that forced feeding with any sort of food, but especially meats, is valuable to make weak and feeble individuals healthy and strong has caused the frequent use of this form of therapy in pernicious anemia, and Mosenthal[9] has shown that it can restore in these cases a positive nitrogen balance.

Meats and green vegetables, partly because of their iron content, have for a long time been thought to be useful to improve "an anemic state of the blood." Meat apparently has been chosen at times simply because it contained blood, which was supposed to be beneficial as food for persons who had an insufficient blood supply. The scientific foundations of the value of iron-containing foods to affect the blood-forming organs were laid by Menghini[10] in 1746, when he showed that iron could be increased in the blood by feeding such foods to animals. About 200 years later, Gibson and Howard[11] made important observations on the effect of a high iron content of the diet in anemia, and showed that in pernicious anemia it can have a most favorable influence on iron metabolism. They also showed that, in cases constantly losing nitrogen, a positive nitrogen balance could be obtained without forced feeding.

One thus finds that the diet usually advised for the pernicious anemia patient is one containing a relatively high nitrogen-content and often a relatively large number of calories. The recommendations of Smith[12] and of Barker and Sprunt[13] are of this sort and, like some others, the latter wisely recommend that the food be selected with a view to giving an ordinary, well balanced

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[1] Habershon, S. O.: On Idiopathic Anemia, Lancet **1**: 518, 551 (May 9) 1863.

[2] Biermer: Halt Zunachst einen Vorbrag über eine von ihm öfters beobachtete eigenthümliche Form von progresseiver pernicioser Anamie, welche mit Capillären Blutungen der Haut, Retina, des Gehirns &c., Cor.-Bl. f. schweiz. Aerzte **2**: 15 (Jan. 15) 1872.

[3] Pepper, W.: Progressive Pernicious Anaemia or Anhaematosis, Am. J. M. Sc. **70**: 313 (Oct.) 1875.

[4] Osler, William: Pernicious Anemia: A System of Practical Medicine, edited by Pepper, W., assisted by Starr, L., Philadelphia, Lea Brothers Company **3**: 898, 1885.

[5] Fenwick, S.: On Atrophy of the Stomach in Relation to Pernicious Anemia, Lancet **2**: 77 (July 21) 1877.

[6] Naegeli, O.: Blut Krankheiten und Blutdiagnostik, Leipzig, von Veit & Co., 1912.

[7] Hunter, W.: Observations on Treatment of Pernicious Anemia Based on a Study of Its Causation, Brit. M. J. **2**: 1, 81, 1890.

[8] Grawitz, E.: Zur Frage der entwegen en Entstehung schwerer Anämien, Berl. klin. Wchnschr. **1**: 641 (June 17) 1901.

[9] Mosenthal, H.: The Effect of Forced Feeding on the Nitrogen Equilibrium and the Blood in Pernicious Anemia, Bull. Johns Hopkins Hosp. **29**: 129 (June) 1918.

[10] Menghini, quoted by Christian, H. A.: A Sketch of the History of the Treatment of Chlorosis with Iron, Medical Library and Historical Journal **1**: 176 (July) 1903.

[11] Gibson, R. B., and Howard, C. P.: Metabolic Studies in Pernicious Anemia, Arch. Int. Med. **32**: 1 (July) 1923.

[12] Smith, quoted by Fitch, W. E.: Dietotherapy, ed. 2, New York, D. Appleton & Co. **3**: 257, 1922.

[13] Barker, L. F., and Sprunt, T. P.: The Treatment of Some Cases of So-Called "Pernicious" Anemia, J. A. M. A. **69**: 1919 (Dec. 8) 1917.

diet to replace a quantitatively deficient and qualitatively ill balanced one, on which these patients are apt to have placed themselves during their illness.

In spite of attention to diet for the anemic patient, the influence of food on blood formation and destruction has received comparatively little consideration, and special sorts of food, because of some particular effect, have seldom been chosen for patients with pernicious anemia.

Complete starvation in man is not considered to cause anemia, but may do so in animals. However, it is known that improper food can cause, and suitable food alleviate, anemia; for example, the "iron starvation anemia" arising in infants who have partaken too long of only a milk diet, and who can be cured by food particularly containing complete proteins and iron. Incomplete diets, particularly those low in protein and relatively rich in concentrated carbohydrate food, can lead to anemia,[14] and even Shakespeare[15] recognized that improper food might impair the state of the blood. Likewise, patients with conditions due to, or associated with, vitamin deficiency experience anemia, and Jencks[16] has noticed that an abundance of vitamins favors blood regeneration. Certain foods, including liver, may benefit patients with sprue. This disease is considered by some partly dependent on a faulty diet, and resembles in numerous ways pernicious anemia, including the fact that the blood picture in the two diseases may be quite similar. Carnivorous animals and thin persons tend to have a greater percentage of hemoglobin in their blood than herbivorous animals and fat persons.[17] This further suggests, as do the observations of Morawitz and Kuhl[18] on man, the favorable rôle that animal protein food may play in blood formation, although dehydration may account for the differences observed.

Some of the earlier experimental work concerning the effect of food on blood regeneration is reviewed by Pearce, Krumbhaar and Frazier.[19] Adequate proteins as well as iron are necessary for the formation of hemoglobin. Certain proteins will not suffice, such as gliadin.[20] However, the amino-acid tryptophane may have a special ability to enhance blood formation.[21] The most important recent work concerning the effect of food on blood regeneration has been done by Whipple and Robscheit-Robbins and their associates.[22] Their carefully controlled work on dogs has demonstrated clearly the value of certain foods, especially liver, on accelerating blood regeneration following acute hemorrhage and the value of iron added to the diet to decrease the anemia due to chronic blood loss.

McCollum[23] has pointed out that liver and kidneys give an exceptionally high quality protein for a low protein intake and can enhance remarkably the growth of animals. These foods are rich in nucleins, and Calkins, Bullock and Rohdenburg[24] have shown that the products of nuclein hydrolysis can stimulate growth. Whipple[25] has suggested that in pernicious anemia there may be a scarcity of the material from which the stroma of the red blood cells are formed, or that a disease of the stroma-forming cells of the marrow exists. Thus, theoretically perhaps liver and other foods rich in complete proteins may enhance the formation of red blood cells in this disease, especially by supplying material to build their stroma.

Fresh red marrow was first used as a means of treatment for pernicious anemia by Fraser[26] in 1894. He reported beneficial results when a patient ate for some time about 100 Gm. a day. It was then and has since been given apparently on the supposition of some hormone effect. Thus, numerous reports have appeared concerning the use of preparations of small amounts of concentrated bone marrow, but without definite evidence of advantage to the pernicious anemia patient. Reports regarding the effect of eating generously of fresh marrow are few and brief, but suggest that it may be beneficial. The nutritional composition of red bone marrow is similar to that of liver and kidneys. If generous amounts of red marrow and liver can improve the state of the blood in pernicious anemia, may their influence not be due to the same, but unknown, cause?

Various investigators have commented on the blood-destroying properties of certain substances derived from fats, and the rôle they may play in pernicious anemia. Stoeltzner[27] recently has reviewed the subject. Also, lipoids have been shown by Baker and Carrel[28] to be a factor in serum that can inhibit growth. Thus, founded on somewhat theoretical grounds, it seemed to us, as it did to Stoeltzner[27] and to Gibson and Howard,[11] that decreasing the amount of fat in the diet of the pernicious anemia patient might have a favorable effect on the state of his blood. Excess of fat in a diet is considered by some to favor putrefaction within the intestine, a condition frequent in pernicious anemia. Hence one might attribute any benefit derived from a low fat content of the diet to alterations in the bacterial flora rather than to some more direct effect on blood formation or destruction.

A further hypothetic reason for decreasing the fat in the diet is that we have noted it is not uncommon for these patients to have consumed throughout life unusually large amounts of food rich in fats. Patients with pernicious anemia also may give a history of partaking for years of some other type of one-sided diet. It is common for them to do so after the definite onset of their illness, when it is not unusual to find that they have a disgust for meat. Pernicious anemia is rare in certain parts of the world where diets are quite different (containing fewer dairy products, less free sugar and muscle meat) from those of the northern parts of Europe and

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[14] McCarrison, Robert Faulty Food in Relation to Gastro-Intestinal Disorder, J A M A **78:** 1 (Jan 7) 1922 Benedict, F G, Miles, W R, Roth, P, and Smith, H M Human Vitality and Efficiency Under Prolonged Restricted Diet, pub 280, Carnegie Inst of Washington, 1919, p 364

[15] Shakespeare Henry IV, act 2, scene 3

[16] Jencks, Z. Studies in the Regeneration of Blood, Am J Physiol. **59:** 240 (Feb) 1922

[17] Hammarsten, O A Text Book of Physiological Chemistry, trans by Mandel, J A, ed 5, New York, J J Wiley and Sons, 1908, p 244.

[18] Morawitz, C, and Kühl, G: Der Blutumsatz des Normalen unter verschiedenen Bedingungen (Eisen, Arsen, Fleisch), Klin Wchnschr. **4:** 7, 1925

[19] Pearce, R M; Krumbhaar, E B, and Frazier, C H · The Spleen and Anemia, Philadelphia, J B Lippincott Company, 1918

[20] Smith, A H, and Moise, T S · Diet and Tissue Growth. The Regeneration of Liver Tissue During Nutrition or Inadequate Diets and Fasting, J Exper Med **40:** 209 (Aug) 1924

[21] Hirasawa, quoted by Wells, H G · Chemical Pathology, ed. 5, Philadelphia, W B Saunders Company, 1925, p 334

[22] Whipple, G H; Hooper, C W, and Robscheit, F. S · Blood Regeneration Following Simple Anemia, Am J Physiol **53:** 151, 167 (Sept) 1920 Whipple, G H: Robscheit, F S, and Hooper, C W: Blood Regeneration Following Anaemia, ibid **53:** 236 (Sept) 1920 Whipple, G. H, and Robscheit Robbins, F S: Favorable Influence of Liver, Heart and Skeletal Muscle in Diet on Blood Regeneration in Anemia, ibid **72:** 408 (May) 1925 (cf p 431); Iron Reaction Favorable, Arsenic and Germanium Dioxide Almost Inert, in Severe Anemia, ibid. **72.** 419 (May) 1925

[23] McCollum, E V. The Newer Knowledge of Nutrition, New York, the Macmillan Company, 1923.

[24] Calkins, G. N, Bullock, F. D., and Rohdenburg, G: The Effects of Chemicals on the Division Rate of Cells with Especial Reference to Possible Pre Cancerous Conditions, J. Infect. Dis. **10:** 421 (May) 1912.

[25] Whipple, G H: Pigment Metabolism and Regeneration of Hemoglobin in the Body, Arch Int Med **29:** 711 (June) 1922

[26] Fraser, T. R. Bone Marrow in the Treatment of Pernicious Anemia. Brit M J. **1:** 1172 (June 2) 1894

[27] Stoeltzner, W.: Ein Vorschlag zur Behandlung der Biermerschen Anämie, München med Wchnschr **68:** 1558 (Dec. 2) 1921.

[28] Baker, L. E, and Carrel, Alexis · Lipoids as the Growth Inhibiting Factor in Serum, J. Exper. Med. **42:** 143 (July) 1925.

America, in which areas the disease is relatively common. These different facts permit one to speculate on the possible partial rôle that some nutritional excess or deficiency may play in the etiology of the disease. Similar thoughts have occurred to others, including the idea that a vitamin deficiency might be a causative factor, as has been mentioned, for example, by Elders.[29]

Leafy vegetables and fruits usually are considered desirable for anemic patients, especially because of their iron content, and strawberries rich in iron appear beneficial for patients with sprue, a disease, as noted, resembling pernicious anemia. We prefer to add these foods to the pernicious anemia patient's diet not only because they are healthful ones for any person to eat, but also because, as Whipple and Robscheit-Robbins[30] have shown, certain ones have an especially favorable influence on hemoglobin production. It is quite probable, however, that their chief effect is not because of their iron content. It seems that such a factor as the character of the proteins or amino-acids in the diet is of much more importance than the iron content for pernicious anemia patients.

Numerous authorities hold the view that an intestinal bacterial toxemia plays an important etiologic rôle in this disease. One may choose to believe that any benefit these patients derive soon after beginning to take certain foods is to be attributed to changing rapidly the intestinal flora, thus decreasing a bacterial toxemia, rather than considering that the foods influence in some unknown, but more direct, manner the formation or destruction of red blood cells.

Gibson and Howard,[11] taking cognizance of Whipple and Robscheit-Robbins' work and the fact that certain lipoid substances could enhance hemolysis, fed pernicious anemia patients a relatively low caloric diet (from 1,500 to 1,900) "rich in iron [liver (daily), fruits, green vegetables, egg yolk] and low in fat" and adequate in vitamins. A somewhat similar diet but containing a less amount of food rich in purines was recommended by Fenlon[31] in 1921. Gibson and Howard,[11] besides demonstrating the favorable influence of their diet on nitrogen and iron metabolism in pernicious anemia and some other anemias, suggested that it enhanced a remission in pernicious anemia and urged its use.

MATERIAL STUDIED AND OBSERVATIONS

Following the work of Whipple and Robscheit-Robbins, we made a few observations on patients concerning the influence of a diet containing an abundance of liver and muscle meat on blood regeneration. The effect appeared to be quite similar to that which they obtained in dogs. These observations, together with the information given above, led us to investigate the value of a diet with an abundance of food rich in complete proteins and iron—particularly liver—and relatively low in fat, as a means of treatment for pernicious anemia.

Observations set forth below have been made on forty-five patients with typical pernicious anemia first partaking of such a diet when in a relapse and continuing it to date (except temporarily omitted by three), or from six weeks to two and a half years.

The special diet[32] used was made as palatable as possible and for each day was practically as follows:

1. From 120 to 240 Gm., and even sometimes more, of cooked calf's or beef liver. An equal quantity of lamb's kidneys was substituted occasionally.
2. One hundred and twenty grams or more of beef or mutton muscle meat.
3. Not less than 300 Gm. of vegetables containing from 1 to 10 per cent of carbohydrate, especially lettuce and spinach.
4. From 250 to 500 Gm. of fruit, especially peaches, apricots, strawberries, pineapple, oranges and grapefruit.
5. About 40 Gm. of fat derived from butter and cream, allowed in order to make the food attractive. However, animal fats and oils were excluded so far as possible.
6. If desired, an egg and 240 Gm. of milk.
7. In addition to the above mentioned foods, breads especially dry and crusty, potato, and cereals, in order to allow a total intake of between 2,000 and 3,000 calories composed usually of about 340 Gm. of carbohydrate, 135 Gm. of protein, and not more than 70 Gm. of fat. Grossly sweet foods were not given, but sugar was allowed very sparingly.

This diet is rich in iron and purine derivatives, containing about 0.03 Gm. of the former and about 1 Gm. of the latter.

At the time the diet was advised for many of the patients, they were able to take only a small amount of food of any sort. Under these circumstances they were encouraged to take as much as possible of liver and fruits, and at least some vegetables, while other sorts of food were not forced. During the first week of the diet, the intake was often less than a thousand calories. After about this period of time, the patients usually felt distinctly better and their appetite began to improve. Then the food was increased gradually until the complete diet was taken. The patients as a rule did so within two weeks after the diet was begun. In fact, frequently they soon became "ravenously hungry" and often anxious to eat more than the customary allowance of liver and meat.

Twenty-four of the forty-five patients carried out the regimen by weighing portions of liver and meat and estimating the amounts of the rest of their food for at least three weeks, and often for the first six after commencing the diet. The other patients, like those after leaving the hospital, have taken their diet at home, following out written directions but not weighing any of their food. Our data strongly suggest that the patients who commenced treatment in the hospital and those few able to have a trained nurse at home have improved on the average rather faster and to an even better degree than the others. When the patients had remained much better for many weeks, their diet was sometimes modified particularly by decreasing the amount of liver and fruit.

The therapeutic regimen for these forty-five patients, besides the special diet, included rest, usually at first in bed for twenty-four hours a day. All but three also took each day about 15 cc. of diluted hydrochloric acid (U. S. P.). These three, however, improved at least as much as the majority of the others. None of the patients received any especial treatment shortly before or after the diet was begun except as follows: A man, aged 69, with pronounced spinal cord lesions and advanced arteriosclerosis, was given five transfusions of blood within about six weeks while attempts were made to get him to eat. Now, three months later, he remains the least well of all forty-five, except for one woman who recently has omitted her diet. Blood was transfused to three others at about the time they first took the special diet. The red blood cell count of none was over 1,400,000 per cubic millimeter four days after transfusion.

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[29] Elders, C.: The Form, Course and Prognosis of the Anemia in Indian Sprue and the Etiology of Pernicious Anemia, Nederlandsch. Tidjschr. v. Geneesk. 58: 2267, 1922.

[30] Footnote 22, third reference.

[31] Fenlon, R. L.: A Diet for Pernicious Anemia, J. Iowa State M. Soc. 11: 50 (Feb.) 1921.

[32] Details concerning this diet with sample menus are given in a paper to be published soon in the Boston Medical and Surgical Journal.

The forty-five patients represent an essentially consecutive series seen in a relapse, and are all that have taken the special diet except one noted below. The series is not entirely consecutive, because during the time the forty-five cases were seen the following additional ones came under observation:

1. Four patients who had had their disease a long time were exceedingly sick, able to take little or no food, and died within a few weeks after they were seen. They ate no liver or kidneys.
2. Five patients consulting us but once and not taking the special diet. Letters indicate that three improved somewhat and two did not.
3. One patient that was in much better condition soon after taking the diet. This patient is not included in the series of forty-five because of several unusual complications.

Many of the forty-five patients had had definite symptoms due to pernicious anemia for more than two years, and two of them experienced such symptoms ten years before taking the special diet. A number of the cases were observed during a year or more before the diet was begun, others for several weeks, and some for only a few days. Many of the patients had remained in distinctly poor health and were unable to do their usual work for from a few months to more than a year before eating the food especially prescribed. During this time, many received various forms of therapy without distinct benefit, including transfusions of blood.

When the special diet was started, the forty-five patients that have continued to eat this kind of food fell naturally into the three following groups: (1) twelve in their first distinct relapse; (2) seventeen in their second relapse; (3) sixteen having had two or more relapses. It is thus evident that all sorts of variations of the disease occurred among the patients, and that the series was not composed chiefly of those in their first relapse, following which considerable "spontaneous" improvement is the rule.

The condition of all forty-five patients became much better rather rapidly soon after commencing the diet. All except one, who has recently omitted her diet, are now at the least in a very fair state of health, and if it were not for disorders in some due to spinal cord lesions, would have an appearance to a layman of being essentially well. However, there are only eleven patients who began the diet a year or more ago, two of whom have taken it for more than two years. Eighteen began taking the diet less than five months ago.

One of the earliest signs of improvement has been a change in the frequency of bowel movements believed to be due particularly to the diet and probably not to diluted hydrochloric acid. Within a few days, those who had had a tendency to diarrhea often began to have one formed stool a day, while, interestingly enough, those who had had normal movements or had been constipated frequently had for several days a few loose stools in each twenty-four hours. The latter patients, then, had a more natural regularity of their bowel movements and a more normal stool than they had had for some time before the diet was taken. The laxative effect of the diet has been observed also to occur in some normal persons.

Clinical improvement has been obvious usually within within two weeks. This has been heralded in the peripheral blood before the end of the first week by the beginning of a most definite rise of the reticulocytes (young red blood corpuscles) of from about 1.0 per cent to usually about 8.0 and even to 15.5 per cent of all the red blood cells. This rise occurred in all fifteen patients that have had such counts made every day or so for from one to three weeks before and some weeks after beginning the diet. By the end of the second week, these cells usually had returned close to their normal percentage. Later, when the red blood cell counts were distinctly high, it was frequent to find, as we have noted formerly, an abnormally small number of reticulocytes. Before they began to increase, the icterus index of the blood serum in these fifteen patients started to fall, and soon the yellow tint of the patient's skin disappeared. This index reached normal in from two to four weeks, and often has fallen to below normal even when the red blood cell count had increased to only 2,500,000 per cubic millimeter.[33]

The accompanying chart and table give in a synopsized manner the trends of the state of the blood in the forty-five patients, taking into consideration, on the one hand, the character of the case, and, on the other, the level of the red blood cells when the diet was begun. The data are given for all forty-five patients before and about one month (from four to six weeks) after the diet was started. Although all the patients have been observed repeatedly, data can be given for only thirty-seven at the end of about two months (from eight to eleven weeks) of treatment, and for twenty-seven between four and six months after treatment began, because eight have taken the diet for less than two months, and eighteen for less than four months. As a measure of the patient's condition, we have chosen to give in the table and chart the red blood cell count rather than the hemoglobin percentage, partly because the latter in pernicious anemia may be at about the same high level (80 per cent) with red blood cell counts of from 2.5 to 4 million per cubic millimeter. It is recognized that figures for both may vary considerably within a few hours. The figure used in synopsizing the data often represents in each instance an average of several counts made within a few days of each other.

*Average Red Blood Corpuscle Count**

Before Diet Started		After Diet Started					
		About 1 Month		About 2 Months		4 to 6 Months	
Number of Cases	Average R. B. C. Count in Millions	Number of Cases	Average R. B. C. Count in Millions	Number of Cases†	Average R. B. C. Count in Millions	Number of Cases†	Average R. B. C. Count in Millions
19	0.90	19	3.28	15	4.08	12	4.50
15	1.60	15	3.25	13	4.09	10	4.54
11	2.39	11	3.83	9	4.41	5	4.47
45	1.47	45	3.40	37	4.16	27	4.50

* The figures represent the count per cubic millimeter before and after starting special diet in three groups of cases of pernicious anemia: (1) with less than 1.2 million; (2) having from 1.2 to 2 million, and (3) having from 2 to 2.75 million before diet was begun. Also, averages for all forty-five cases are shown.

† The differences in the number of cases after about one month is because some have not taken the diet for as long as two, and others as long as four months.

Inspection of the chart and table shows the rapidity with which the red blood corpuscles increased, the high level they attained at the end of about one month, two months and from four to six months after the diet was begun, and the rather slight differences that occurred in the bloods in the cases falling into the three groups based on the number of relapses that had occurred. The percentage increase of cells (and the same is true of the hemoglobin) at the end of a month was usually very much greater in patients starting the diet when their red blood cell count was less than 1,200,000 per cubic millimeter than in those in whom it was distinctly higher. This occurs in other pernicious anemia patients rapidly restoring their blood. The blood of patients with rather high counts of their red blood corpuscles and prominent signs of injury to the spinal cord responded more slowly perhaps and less well than others, and, as is to be expected, no striking change occurred in very marked symptoms or signs due to spinal cord degeneration.

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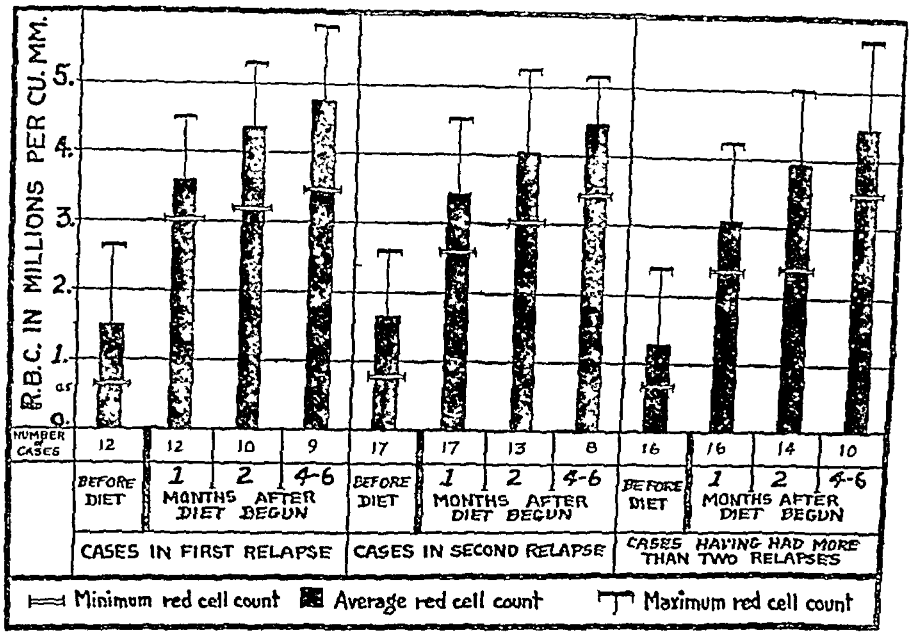
[33] These changes in the blood and numerous others will be presented in a subsequent paper.

In pernicious anemia, remissions after two relapses are frequently less marked than previous ones, so that the red blood cell count is apt to be lower in a third or subsequent relapse than in a former one. In spite of the excellent remissions our patients had soon after beginning the diet, the data in the chart show what might be expected; namely, that not only did the third group of patients (those having had more than two relapses) have on the average a slightly lower red blood cell count before the diet was started, but also that afterward their counts were apt to increase more slowly and not become quite so high as in the other two groups. Only four of the patients had red blood cell counts as low as between 3 and 2.5 million per cubic millimeter after taking the diet for about a month. The cases of three belong to this third group. Even so, two had 4,000,000 or more red blood cells per cubic millimeter at the end of four months. The other, the patient transfused several times, has now, after three months of dieting, only 2,600,000 per cubic millimeter. However, his hemoglobin has risen from 25 to 70 per cent. The fourth case with a red blood cell count of less than 3,000,000 per cubic millimeter at the end of a month belongs to the second group, and now, two and a half months after the diet was started, shows a red blood cell count of 3,300,000 per cubic millimeter.



Red blood cell counts in forty-five cases of pernicious anemia before and after beginning special diet. Cases grouped according to the number of relapses the patients had had. One and two months after diet began indicates an approximate amount of time and for any given case is not less and often somewhat more than four or eight weeks. The differences in the total number of cases after about one month are caused by the fact that some patients have had the diet for less than two, and others for less than four, months.

The data from which the table and chart were prepared have been analyzed in various ways, and the following statements indicate in a different manner than they do what satisfactory improvement was shown in the patients' blood: Seventy-six per cent of all the patients had 2,000,000 or less red blood corpuscles per cubic millimeter, with their hemoglobin usually 55 per cent or less before beginning the diet. In contrast to this, approximately a month (from four to six weeks) later, 91 per cent had over 3,000,000 and 42 per cent over 3,500,000 red blood cells per cubic millimeter, with corresponding rises in the hemoglobin percentage. After taking the diet for about two months (from eight to eleven weeks), 89 per cent (of the thirty-seven that had taken the diet this length of time) had 3,500,000 or more red blood corpuscles per cubic millimeter, while 73 per cent had 4,000,000 or more. All had a hemoglobin of approximately 80 per cent or over. None of the patients studied after they had eaten the food selected for them for between four and six months had less than 3,500,000 red blood cells per cubic millimeter; 81 per cent had 4,000,000 or more, and the counts of 30 per cent were over 5,000,000 per cubic millimeter. The hemoglobin was 80 per cent or above in all, often 90 per cent, and in several cases reached more than 100 per cent. However, it is to be noted that none of these cases observed between four and six months after the diet was started had appeared as advanced as several of those in patients that improved the least, but which have not yet had the diet for four months. The observations on the eighteen patients who have been on the diet for more than six months show that their count may fluctuate, though it has remained above 3,200,000 per cubic millimeter, and usually has been over 4,000,000, with the hemoglobin remaining at 80 per cent or more. There are three exceptions to this statement, for three patients had a relapse about eight weeks after changing their diet. One did so a year and another seven months after the special diet was begun. There was a count slightly below 3,000,000 per cubic millimeter in both for two or three weeks. Their red blood cells and hemoglobin then very rapidly increased under rest and on eating an increased amount of liver and fruit. The third patient's red cell count was 4,200,000 per cubic millimeter a month before she changed her diet. She has just resumed the special diet, and her red cell count is 1,900,000 per cubic millimeter and hemoglobin 50 per cent.

COMMENT

Cases of pernicious anemia undergoing distinct remissions often show rapid and striking improvement, such as occurred in almost all our patients. A considerable number of them have made such remarks as, "I feel better than for several years," "better than for two years," and "stronger than after the two times my blood went low before." Such statements, to be sure, are made by pernicious anemia patients having remissions that have not taken this diet, and there is no case in this series of forty-five that cannot be paralleled by a similar one having a so-called spontaneous remission. However, the records of eleven cases show that the red blood cell count in the remission following the "liver diet" has remained distinctly higher, not only than in a former remission, but also in three cases higher, for at least two months, than in their three previous remissions. It is, thus, again pointed out here that it is rather unusual to find the red blood corpuscle count in a late remission distinctly above the level obtained in several earlier ones. A few of the patients observed for many months before they took the special diet ate, by our advice, relatively small amounts of liver two or three times a week, together with other food of the sort contained in the special diet. Under such a regimen a moderate degree of improvement occurred in some, to be followed later by a relapse of their case. It was rather striking that when the same patients were placed on a diet rich in liver they improved markedly. This suggests, as do similar observations we made some time ago in other cases, that if liver and food like it play a rôle in improving the blood of pernicious anemia, it is desirable for the patients to take such food daily and in large amounts.

The spontaneous remissions of pernicious anemia and the bizarre course it often runs make it notoriously difficult to determine accurately the effect of any procedure on the disease. All sorts of therapeutic procedures have been advised; many because a few cases improved promptly after their trial. Waves of enthusiasm for certain methods have vanished soon when it was shown that the earlier reports of benefit could be attributed readily to the natural course of the disease. There is, however, no doubt, as shown by some of the early and more recent investigators, that a well balanced, nutritious diet sometimes aids to enhance a remission. The patient may be helped by numerous other forms of treatment, such as those to change the intestinal flora, the injection of protein substances, the taking of arsenic, the transfusion of blood, and splenectomy.

At least one remission, as has been noted by Cabot,[34] takes place at some time, but at no regular time, in about 80 per cent of pernicious anemia cases. Precise data are sparse concerning the frequency, degree and rate of remissions in similar groups of cases treated in different ways. Splenectomy has caused quick and marked improvement in 64 per cent of the patients undergoing this operation, while about 15 per cent more have shown some benefit from the procedure.[35] However, the remissions that followed have been of no longer duration than those heretofore reported as of a spontaneous nature. Excluding desperately ill patients, Minot and Lee[36] noted in 1917 that about 35 per cent of forty patients treated in no especial manner had a moderate or better remission soon after they were seen. Following the transfusion of blood into forty-six similar patients, about 50 per cent continued to have definitely improved health for at least many weeks than for some time before the procedure. Not more than 20 per cent of the ninety-six patients of these two groups soon had rapid and marked increase in their red blood cells. An analysis of fifty other cases observed between 1916 and 1923 in sequence, except for several in a terminal condition, indicates that 45 per cent developed a definite remission soon after we saw them. These patients were treated in various ways by numerous physicians, but did not eat large amounts of liver or similar food. The remissions were seldom of marked degree, with the red blood corpuscles reaching 4,000,000 or more per cubic millimeter.

No entirely satisfactory data have been found concerning the frequency of remissions following the use of a nutritious high caloric diet and such a regimen as that prescribed by Barker and Sprunt. We have treated in this manner twenty-five partially selected cases, from which it appears that distinct remissions may follow such therapy in about 65 per cent of the instances. Even so, apparently the red blood cell counts of patients on such a diet and who were improved distinctly at the end of one or two months averaged less than for all forty-five who have eaten generously of liver for the same amount of time.

The evidence at hand suggests that the dietetic treatment of pernicious anemia is of considerable importance. It has been possible to demonstrate in forty-five cases seen essentially in sequence that following a diet rich in liver and low in fat a distinct remission of the anemia occurred rather promptly. The promptness and rapidity with which the red blood corpuscles and hemoglobin increased, coincident with at least rather marked subjective improvement in the sense of well being and clinical appearance of all the patients and the strikingly better health of many, is at least unusual in pernicious anemia. It is also not customary for the red blood cell counts during remissions of pernicious anemia to be so frequently of the height that occurred in these patients. We are inclined to believe that something contained in the foods rich in complete proteins is particularly responsible for the improvement in the state of the blood. The low fat content of the diet is assumed to have a less important effect than the character and amount of protein, although probably excess of nitrogen per se is unimportant. If liver and similar food is of value, every means must be taken, including the skill of the nurse and cook, to get patients to eat daily as much as possible, preferably 200 Gm. or more. Failure could be attributed to taking too little of such food.

There are no data to indicate whether the remissions in these forty-five cases will last longer than those of others.

It is possible that this series of cases eventually may be proved to be unusual in that there happened to be treated a group that would have taken a turn for the better under other circumstances. Also, time may show that the special diet used, or liver and similar food, is no more advantageous in the treatment of pernicious anemia than any ordinary nutritious diet. Let this be as it may, at the present time it seems to us, as it has to Gibson and Howard, that it is wise to urge pernicious anemia patients to take a diet of the sort described.

SUMMARY

The dietetic treatment of pernicious anemia is of more importance than hitherto generally recognized.

Forty-five patients with pernicious anemia observed essentially in sequence are continuing to take a special diet that they have now been living on for from about six weeks to two years but which was temporarily omitted by three. This diet is composed especially of foods rich in complete proteins and iron—particularly liver—and containing an abundance of fruits and fresh vegetables and relatively low in fat.

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[34] Cabot, R. C.: Pernicious Anemia, in Osler and McCrae's Modern Medicine, ed. 2, Philadelphia, Lea and Febiger 4, 1915.

[35] Krumbhaar, E. B.: Late Results of Splenectomy in Pernicious Anemia, J. A. M. A. **67**:723 (Sept. 2) 1916.

[36] Minot, G. R., and Lee, R. I.: Treatment of Pernicious Anemia Especially by Transfusion and Splenectomy, Boston M. & S. J. **177**:761 (Nov. 29) 1917.

Following the diet, all the patients showed a prompt, rapid and distinct remission of their anemia, coincident with at least rather marked symptomatic improvement, except for pronounced disorders due to spinal cord degeneration. Improvement was often striking, so that where the red blood cell count averaged for all before starting the diet 1,470,000 per cubic millimeter, one month afterward it averaged 3,400,000; and for the twenty-seven cases observed from four to six months after the diet was begun, the average count was 4,500,000 per cubic millimeter.

Patients having had two or more relapses showed on the average slightly lower red blood corpuscle counts about one and two months after commencing the diet than did those who had started it in their first or second relapse.

Change in the frequency of bowel movements, temporary increase of reticulocytes in the peripheral blood, and decrease of the icterus index of the blood serum were among the earliest signs that heralded the patient's better health.

All the patients have remained to date in a good state of health except three, who discontinued the diet; two rapidly improved on resuming it and the other has just commenced it again. As the diet was advised for most of the patients less than eight months ago, enough time has not yet elapsed to determine whether or not the remissions will last any longer than in other cases.

SUBSEQUENT OBSERVATIONS

Since the data presented in this paper were compiled, the following additional information has been obtained: The eight patients who had taken the diet for only about one month had red blood cell counts at the end of about two months of between 3,500,000 and 6,000,000, with an average of 4,400,000 per cubic millimeter. One of these had but 2,500,000 at the end of one month and now at the end of three and a half months has 4,500,000 per cubic millimeter.

The ten patients recorded as having taken the diet for only about two months showed in four to six months after starting it as follows: Seven had an average red blood cell count of 5,100,000 per cubic millimeter. One who had had about 5,000,000 had but 3,500,000 per cubic millimeter. Another who had 2,500,000 per cubic millimeter at the end of the second month had the same number two months later, although symptomatically he seemed better. The tenth patient could not obtain the proper diet between the second and fourth month, and had at the latter time 3,000,000 per cubic millimeter.

The patients who had the diet from four to six months, or longer, when the data were compiled, continued in the next two and a half months to have on the average as satisfactory counts, except as noted below. The majority of these have shown higher counts than formerly. Two of the cases have had at three different times red blood cell counts of 6,000,000 or more per cubic millimeter. Two patients who have had the diet for more than six months have recently eaten very little liver, and their counts have fallen in two months from about 4,000,000 to about 3,000,000 per cubic millimeter. The red blood corpuscles of the patient referred to on page 474 as in a relapse increased 3,000,000 per cubic millimeter during the first eight weeks after the diet was resumed.

Information at hand suggests that some cases in which transfusion is done many times before the diet is started may respond but little to it.

Resistance to Flow of Bile.—The reaction of the gastric contents may conceivably influence the resistance to the flow of bile into the intestine. For there is an immediate lessening in the resistance on the taking of food, and a gradual increase in the half hour or hour following, during which the reaction of the gastric contents is presumably becoming more acid. Since food may at this time be passing through the pylorus, a possible mechanical effect of peristalsis may in addition be invoked to explain the findings.—Elman, Robert; and McMaster, P.D.: *J. Exper. Med.*, Aug. 1, 1926.

THE RELATION OF ANEMIA, PRIMARY AND SECONDARY, TO VITAMIN A DEFICIENCY *

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The opinion that the toxemia responsible for the production of the symptoms of pernicious anemia (hematopoietic, gastro-intestinal and nervous) is of intestinal origin is chiefly based on the prominence of the gastro-intestinal symptoms of the disease. The atrophic degeneration of the tongue, the hunterian glossitis, the achylia gastrica which frequently precedes the anemia by many years, the atrophy of the gastric and intestinal mucosa found occasionally post mortem as the anatomic substratum of the achylia, direct the attention to the gastro-intestinal tract. To this may be added the association of severest anemia with intestinal parasites and occasionally with incomplete obstruction. Though the anemia found in intestinal malignancy can usually be distinguished from the pernicious anemia of unknown etiology, it is noteworthy that a relatively small carcinoma of the ileum or first part of the cecum is frequently associated with a profound anemia.

It may be assumed that the involvement of the three organ systems (hematopoietic, gastro-intestinal and nervous) has a common cause and is therefore dependent on the same toxic factor, or that the phenomena are dependent on one another. The latter view would concede to the achylia gastrica and the atrophic changes in the fundus glands and intestinal mucosa a dominant rôle, which leads secondarily to the involvement of the other systems by the absorption of a hemotoxic and neurotoxic substance.

It seems true that the stomach, and especially the upper small intestinal tract, are invaded by a flora in pernicious anemia which is absent or scanty in normal conditions. Certain investigations, following the earlier work of Christian Herter, have directed attention again to the presence of large numbers of *B. aerogenes-capsulatus* (*welchii*) in the duodenum, and Kahn and Torrey[1] were able to produce by intravenous injection of the toxin of this organism a disease picture in monkeys that is very suggestive. In the opinion of these investigators it is a "specific toxin" which produces the profound anemia with its characteristic features, the achylia and the combined sclerosis of the spinal cord.

Other investigators observed that the common colon bacillus is found in much greater frequency and number in the upper intestinal tract in pernicious anemia patients than in normal persons. Both *B. welchii* and *B. coli* being normal inhabitants of the human intestinal tract, their etiologic relation to pernicious anemia must depend either on an abnormally large number present in a part of the small intestine, where they are normally exceedingly scarce and uncommon, or on certain specific strains that have the faculty of forming a specific poison not formed by other strains of the same bacterial species. That the latter assumption is not without parallelism and foundation is suggested by some of our own work on the production of proteinogenous amines by *B. coli.*[2] Of twenty-nine strains of *B. coli* studied, only six were able to convert histidine by decarboxylation into histamine. These six strains could not be distinguished by any other morphologic, cultural or chemical characteristics from the other strains of this group. The relation of similar amines to pernicious anemia was suggested some twelve years ago through a paper of Iwao,[3] who reported that he had produced a very severe anemia in guinea-pigs by the subcutaneous injection of p-oxyphenlyethylamine (tyramine). This anemia resembled pernicious anemia in most details of the blood picture. Since tyramine is formed by the action of *B. coli-communis* on tyrosine by decarboxylation, and since tyramine is normally found in the intestinal content of man,[4] Iwao's paper seemed a very suggestive contribution to the pathogenesis of pernicious anemia. Accordingly, one of our collaborators, Mr. R. L. Harris, and one of us [5] attempted to repeat Iwao's work about six years ago, but unfortunately with absolutely negative results. No other attempt is known to us that has confirmed the work of the Japanese investigator. Our present knowledge of the relation of dietary factors to the production of anemia permits of a possible explanation of the success of the Japanese investigator and our own failure, which will be discussed at a later date.

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[1] Kahn, M. C., and Torrey, J. C.: A Pernicious Anemia-Like Blood Condition Produced in Monkeys with B. Welchii Toxin, Proc. Soc. Exper. Biol. & Med. 22:8-13, 1925.

It is known to all students of the subject that in Scandinavia and Finland a form of pernicious anemia is endemic which is, in all details of the blood and organ changes, indistinguishable from Addison's pernicious anemia, but the etiology of which is known. This is the anemia due to the tapeworm *Bothriocephalus latus*. It is of utmost importance for our concept to note that, according to the investigation of Sievers,[6] about 20 per cent of the total population of Finland are carriers of this species of tapeworm. But only a fraction of 1 per cent of these hosts suffer from pernicious anemia.

The causal relationship between the tapeworm and the occasional severe anemia of its host is chiefly based on the experience that in many cases the complete expulsion of the parasite is followed by permanent recovery. But while this is true in many instances, it is by no means so in all, and the usual explanation is that the morbid processes have progressed so far that a restitution of the degenerative changes in the organs has become impossible. The opinion that in all cases of *Bothriocephalus* anemia we have to deal with the coincidence of a "cryptogenic" true Addison anemia occurring in a tapeworm carrier is completely disproved on the basis of numerical statistics and deserves no further discussion.

Have we then to assume that only certain individuals of the species *Bothriocephalus latus* form a hemotoxic and neurotoxic poison leading to the severe anemia? This is possible but highly improbable.

It seems that the problem is a more general one and is the same if we have to deal with a poison formed by microscopic organisms or by macroscopic parasites. We believe that the poison is formed in many instances, but is not absorbed or is destroyed before absorption from the intestinal tract. This assumption is suggested to us by our work on the toxic amines.[7] We could show that the normal intestinal tract frequently contains very large doses of these poisons, which if they could reach the circulation as such would cause violent sickness or death. They are probably rendered physiologically inert in their passage through the intestinal wall. We seem to have to deal not only with a simple increased permeability but also with a special function of the intestinal tissue, which seems to be an organ of primary importance in the catabolism of certain protein derivatives. The term permeability might be used for brevity, if this mode of action is understood, but it must be kept in mind that the intestinal wall does not normally act merely as a semipermeable membrane which does not partake chemically in the catabolism of the poisons, but in fact takes a most active part in the chemical processes that render these potent substances harmless.

The whole problem seems, therefore, to center round the query, What are the conditions under which the normal viability and impermeability of the intestinal wall is lost? It is safe to state generally that an extensive cell injury must have taken place which leads to profound alteration of the normal composition, structure and function of the intestinal epithelium, and perhaps also of the liver cells. This alteration we believe to be, at least in some cases, the result of a long standing deficiency in vitamin A (and perhaps B and C also) due to chronic underfeeding [8] with these essential foodstuffs for a period of many years or due to a deficiency of their utilization. Vitamins may be supplied in the diet, but they may be destroyed under the influence of a chronic infection or are not available for some reason.

We believe that the cryptogenic primary pernicious anemia of Addison is, at least in certain cases, an intoxication through bacterial poisons formed sometimes by the colon bacillus, at others by the streptococcus and Welch bacillus. These poisons, which are hemolytic, myelotoxic and neurotoxic, are formed most commonly in the upper small intestinal tract in persons who suffer from achylia gastrica. The latter anomaly, achylia gastrica, is a relatively frequent dysfunction of the organ, and attempts have been made to explain it anatomically by the atrophy of the fundus glands.[9] There is, however, little doubt possible in our opinion that chemical changes in the cells of the intestinal wall precede any assumed possible structural changes. Atrophy of the mucosa of the upper small intestinal tract is not infrequently associated with the gastric atrophy in patients with pernicious anemia. This gastric achylia, perhaps associated with a similar dysfunction of the glandular structure of the duodenum, jejunum and ileum, leads to an invasion of the small intestine by many microorganisms which form soluble poisons. These poisons are absorbed unchanged only in such patients suffering from achylia if the intestinal cellular structure and function have been profoundly changed, and this may be brought about through vitamin deficiency or underfeeding over many months and years. Since vitamin A underfeeding for several months leads to intestinal atrophy,[10] it is also possible that the atrophy of the gastric glands and the resulting achylia are in some instances the result of the vitamin deficiency. The normal absence or poverty of micro-organisms in the duodenum may not be due alone to the acidity of the gastric juice, but very probably also to the bactericidal power of the duodenal juice.[11]

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[2] Hanke, M. T., and Koessler, K. K.: Studies on Proteinogenous Amines, XII, The Production of Histamine and Other Imidazoles from Histidine by the Action of Micro-Organisms, J. Biol. Chem. **50**: 131 191 (Jan.) 1922.

[3] Iwao, Toku: Beiträge zur Kenntnis der intestinalen Autointoxikation, Biochem. Ztschr. **59**: 436, 1914.

[4] Hanke, M. T., and Koessler, K. K.: Studies on Proteinogenous Amines, XVII, On the Faculty of Normal Intestinal Bacteria to Form Toxic Amines, J. Biol. Chem. **59**: 835 853, 1924.

[5] *Cited by* Wells: Chemical Pathology, ed. 5, p. 342, footnote 59, 1925.

[6] Sievers: Till Kännedomen om förekomsten of intestinalparasiter hos människan i Finnland, Finska läk. sällsk. handl. **48**: 1, 1906, quoted from Tallqvist: Ztschr. f. klin. Med. **59**, 1907.

[7] Hanke, M. T., and Koessler, K. K.: Studies on Proteinogenous Amines, XXI, The Intestinal Absorption and Detoxication of Histamine in the Mammalian Organism, J. Biol. Chem. **59**: 899 903 (April) 1924.

[8] Cramer, W.: On Vitamin Underfeeding, Brit. J. Exper. Path. **3**: 298 (Dec.) 1922; On the Mode of Action of Vitamins, Lancet **1**: 1046 (May 26) 1923; Vitamins and the Borderland Between Health and Disease, Lancet **1**: 633 (March 29) 1924.

[9] See, however, the recent critical review by Faber, Knud: The Intestinal Origin of Pernicious Anemia, Ann. Clin. Med. **4**: 788, 1926.

Any theory that tries to explain the etiology and pathogenesis of pernicious anemia has to prove its validity in two ways: (1) clinically, by the analysis of the morbid history of the patients and the efficacy of the treatment based on the consideration of the pathogenic factors involved, in this instance, achylia and the dietary factors; and (2) by the experimental production of the disease in animals.

CLINICAL CONSIDERATIONS

The idea that there might exist a definite relationship between a faulty diet, i. e., a diet deficient in vitamins, and severe anemia of the pernicious type, suggested itself to one of us (K.) through observation of a patient who entered our medical service at the Cook County Hospital in 1925, with the examining room diagnosis of scurvy.

S. L., a man, aged 60, complained chiefly of weakness. He was a very uncooperative patient, and the junior intern, who wrote the first history, noted a peculiar mental attitude which showed itself chiefly by being insulted and offended when he was asked questions regarding his feelings and complaints. His mouth, gums and tongue had been sore for the last few days. He was constipated but had no acute abdominal distress. Neither nausea nor vomiting was present. There were no complaints or subjective symptoms on the part of the respiratory or cardiovascular systems. There were no genito-urinary symptoms. On the part of the neuromuscular system, there was weakness progressing during the last four months, but no generalized pains, tremor or paralysis. The patient did not remember having had any previous illness. No operations had been performed. There was no history of venereal diseases. The father died at the age of 70 of unknown cause; the mother, of old age (?). The patient had had four brothers and five sisters, about whom he could give no information. He did not use tobacco or alcohol. Questioned regarding his diet, he informed us that he had lived for many years chiefly on bread, rolls and coffee.

The patient appeared weak and ill. The mucous membranes of his mouth and his tongue were pale. The gums around the teeth, which were in very poor condition, were spongy and red, and the teeth were loose. Deep palpation of the ribs and chest wall was painful. The extremities showed marked loss of weight, muscular atrophy and some pain on pressure. Subcutaneous hemorrhages were seen under the skin in the popliteal region on the right side. There were macular lesions, roughly symmetrically distributed on the back, abdomen, arms and legs. The center was lighter than the adjacent skin, and was surrounded by a darker pigmented ring. The lesions varied in size from one-eighth to three-eighths inches (3 to 10 mm.) in diameter. There were no subjective symptoms, and the patient did not know how long he had had the lesions or how they had commenced. The most probable diagnosis, after the first examination, was scurvy. An antiscorbutic diet was ordered. A few days later a complete study of the patient's blood revealed: hemoglobin (Dare), 35 per cent; erythrocytes, 1,030,000; leukocytes, 2,100. Differential count revealed: polymorphonuclears, 41 per cent; lymphocytes, 58 per cent; mononuclears, 1 per cent. There were moderate anisocytosis and poikilocytosis, with marked polychromatophilia. No erythroblasts were present. The volume index was 1.12; color index, 1.7. A diagnosis of aplastic pernicious anemia was made.

The patient presented thus a picture which had certain features suggestive of scurvy; namely, sore mouth and gums, subcutaneous hemorrhages and pains on pressure over the bones; but the blood findings were characteristic of the aplastic form of pernicious anemia. The extremely restricted diet on which the patient had lived for many years, consisting entirely of starches and coffee, contained none or very little of the essential vitamins A, B, C or D.

While this patient was in our ward and we were deliberating over the relation of this anemia to his faulty diet, a man with a typical case of pellagra entered our service in the same ward. He showed the characteristic skin lesions on the back of his hands and forearms. His blood was perfectly normal and no anemia was present, but he showed zones of paresthesia in the extremities.

The relation of pellagra to any single one of the vitamins has not been proved; but that the dietary factor and especially vitamin B are of primary importance in the cure of the disease seems probable through the work of Goldberger. The relation of vitamin B to the nervous symptoms in pellagrins (paresthesias, peripheral neuritis, and the combined sclerosis of the spinal cord) recalls similar symptoms present in pernicious anemia. The relationship of vitamin B to the form of polyneuritis of man known as beriberi comes to mind in this connection.

The tendency to hemorrhage, so predominant a symptom in scurvy, occurs quite often in pernicious anemia, and it seems reasonable to think of a common causative factor—the absence or deficiency of vitamin C in both conditions.

The vitamin theory of pernicious and other severe anemias, which forms the basis of our experimental work and of the treatment of our patients, might be thus expressed:

1. The blood changes and the changes in the gastro-intestinal tract may be due to vitamin A underfeeding over a long period of years.
2. The nervous symptoms might be related to an absence or deficient quantity of vitamin B.
3. The tendency to hemorrhages found in severe anemias may be due to the partial or complete lack of vitamin C.

This theory does not assume to invalidate the importance of bacterial poisons for the pathogenesis of pernicious anemia. The tissue changes brought about by the chronic vitamin deficiency may facilitate the action of these poisons.

With these considerations in mind, as well as other clinical observations, an attempt was made to learn whether a condition similar to human pernicious anemia might be produced in experimental animals, by producing protracted vitamin deficiency under suitable conditions.

EXPERIMENTAL

White (albino) rats of known pedigreed healthy stock were used in our experiments, first, because they are the animal of choice in vitamin studies, and secondly, because they are by nature an omnivorous animal and for this reason held out more promise for the production of a disease thus far known only in man

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[10] Cramer (footnote 8, second reference).

[11] Lowenberg, W.: Ueber die pathologische Bacterien Ansiedlung im Duodenum und ihre ursachlichen Factoren, Klin. Wchnschr. 5: 548-551, 1926.

The animals were divided into three groups. The first of these was placed on a slightly modified laboratory diet used by Cramer[10] in his studies on vitamin underfeeding (table 1). This is our low fat-soluble A diet, which is similar to the diet of many people. Nothing is extracted—it is fed in the natural state.

Table 1.—*Laboratory Diet*

	Gm.
Bread	30.0
Rice	20.0
Corn meal	20.0
Casein	12.0
Minerals	5 0
Cottonseed oil	12.5
Brewers' yeast (Harris)	100.0 mg. to each rat
Minerals	
Sodium chloride	0.5515
Calcium chloride	0.6042
Calcium carbonate	1.6140
Dipotassium hydrogen phosphate	0.7760
Potassium carbonate	1.2100
Magnesium carbonate	0.2090

For the low water-soluble B diet, the brewers' yeast is omitted, for there is some B in the natural foods. The same "recipe" is used otherwise. The animals are fed as much as they will eat; their dishes are never empty.

The second diet, the vitamin-rich diet, differs from the first only by the substitution of 12.5 cc. of cod liver oil for the cottonseed oil. Foods in the natural state and Squibb's cod liver oil were used. This diet is rich in fat-soluble A and also in water-soluble B.

The third diet contained no fat-soluble A. This was removed from the cornmeal bread and casein by three successive extractions with hot 95 per cent alcohol, each lasting six hours, and subsequent washings with ether. The mineral mixture used was the same as in the laboratory diet. Here everything but the rice, minerals and brewers' yeast is extracted free from fat-soluble A. The extraction of the A also took out the water-soluble B vitamin, so in the water-soluble B free diet this same diet is used but the brewers' yeast is omitted and cod liver oil is substituted for the cottonseed oil.

Before the changes in the blood of our animals under varying conditions of diet are discussed, it is necessary to make some statements regarding the "normal" blood findings of healthy rats. The number of red cells per cubic centimeter, if taken from peripheral vessels, varies only slightly with the age of the rat after the animal is 90 days old, and is given by Jolly[12] as between 8.5 to 8.8 millions. Cramer[13] and his collaborators give from 10 to 10.9 millions for rats above 60 days of age. Our own determinations were made on twenty-five rats, and the average of 128 counts on these animals, none of which were below 60 days of age and which were on a vitamin-sufficient diet, was 15.1 Gm. of hemoglobin; 8,500,000 erythrocytes and 8,800 leukocytes. Old rats, between 1 and 3 years of age, show much higher figures. Seventeen such rats studied gave an average of 18.1 Gm. of hemoglobin, 10,260,000 erythrocytes and 12,200 leukocytes.

Five weeks old rats, which have been nursed by a mother who has received in her diet ample vitamins, weigh about 40 Gm. When such rats are kept on a vitamin A free diet for from eight to twelve weeks, so that they vary in age from 13 to 17 weeks, their weight is only around 60 to 90 Gm. After this they fail to increase any more in weight, which remains constant for from two to three weeks, then they begin to decline progressively, become emaciated, refuse to eat and lose weight rapidly, so that a tenth of their maximum weight, or one sixth of the present weight, may be lost in from twenty-four to forty-eight hours. The final marked drop in the weight curve is produced by diarrhea, by dehydration and to some degree probably by metabolizing their own body tissues (starvation). Such an animal will not take food or liquids unless they are placed in its mouth. It is emaciated and very weak. Muscular coordination is poor; clonic convulsions occur occasionally. It is certain to succumb unless its body fluids are increased by intraperitoneal injections of salt solution and glucose. Soon after the glucose and salt are given, the convulsions stop and the rat will eat eagerly when fed, but is still too weak to feed itself. Cod liver oil or butter must be forced by mouth, along with sugar and a weak solution of sodium bicarbonate (from 0.5 to 1 per cent). Some animals develop a paralytic ileus, and their life can be saved only with much careful nursing. If the animal is now kept on a diet rich in vitamin A, it will soon apparently gain its normal health but will be smaller and of less weight than a normal control animal of the same age. If after recovery the vitamins are removed from the diet a second time, the maximum weight loss may take place in as short a time as eleven days.

BLOOD CHANGES

When rats that are on a vitamin A free diet are kept on this diet until they die, the blood during life shows the following changes: After an initial rise in weight, which is associated with a concomitant increase of hemoglobin and erythrocytes, there occurs usually a drop both in erythrocytes and in hemoglobin soon after the weight curve began to go down, to be followed soon by a rise of both erythrocytes and hemoglobin. The color index during these changes varies but little, staying in the neighborhood of 1. A constant feature of the picture is the agonal rise in both erythrocytes and hemoglobin and a fall in leukocytes, which is associated with the terminal loss in weight and is probably due to dehydration.

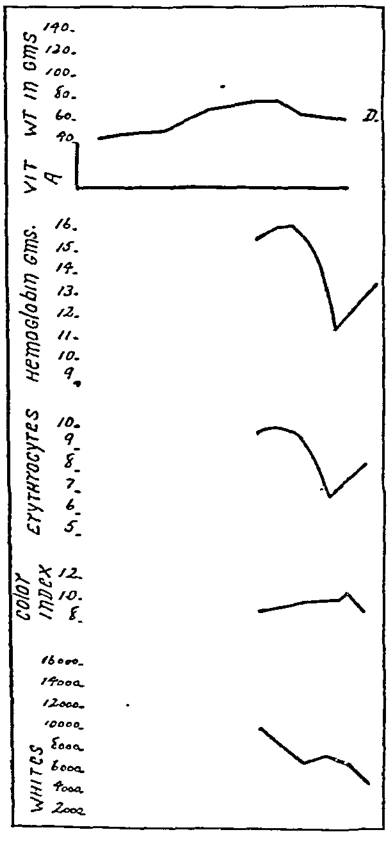

Chart 1.—Observations on rat 18: *D*, died.

In attempting to understand more thoroughly what takes place in the blood of a rat that is dying from lack of vitamin A, we attempted to hold the weight constant

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12. Jolly, J.: Variations de l'hemoglobine, du nombre des globules rouges, etc., chez le rat blanc, Compt. rend. Soc. de biol. **66**: 136-139, 1909.

13. Cramer, W.; Drew, A. B., and Mottram, J. C.: On Blood Platelets, Proc. Roy. Soc. B **93**: 449-467, 1923.

in a vitamin A depleted animal by the addition to the diet of a small quantity of vitamin A in the form of butter. The quantity of vitamin added seems to be a factor of primordial importance as regards the rate and intensity of regeneration. One group, illustrated by rat 11, was given enough vitamin to keep the animal in a state of chronic vitamin deficiency but yet to prevent death. After three weeks, when the animal had declined in weight (10 Gm.), the quantity of vitamins was increased to produce a normal weight curve.

The blood during this period of chronic vitamin A deficiency, lasting three weeks, shows a slight decrease in erythrocytes, which is followed by an increase in these cells. Also the hemoglobin drops at first but then comes back soon to its initial value. On the second addition of vitamin to the diet, the hemoglobin as well as the erythrocytes shows a decided and almost parallel drop; also the leukocytes fall almost synchronously. Two weeks later, after this acute drop, erythrocytes, hemoglobin and leukocytes return to normal. This "blood crisis" follows the sufficient storage of vitamin in the body. During this period the color index is 1 or above 1. From two to three weeks after the first vitamin addition there appear a number of blue staining (basophilic) young cells of slightly increased diameter. These polychromatophil new erythrocytes are present in a remarkable abundance after the second ample addition of vitamin. As the animal progresses to normal strength, these basophilic cells diminish again in number. The color index following the second addition of vitamin rises above 1.

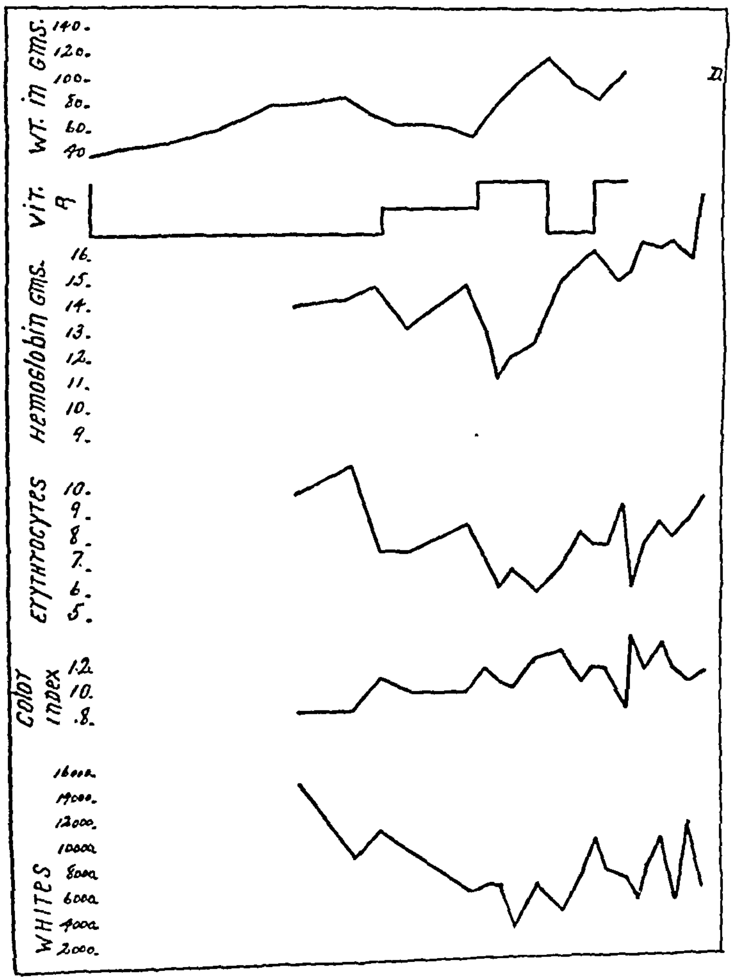

Chart 2.—Observations on rat 11: *D*, died.

In a second group of rats a quantity of vitamin A, larger than in the preceding group, was added, so that after three weeks ample vitamin was present (stored) to produce growth without any further addition of vitamin being required. Rat 15 is used as a specific example of this group (chart 3). At the age of 15 or 16 weeks, when the weight of this rat began to remain stationary, vitamin A in the form of butter fat was added to its diet to hold the weight stationary and prevent death. Following the addition of a small quantity of fat soluble A in the form of butter, the weight of the rat remained about constant for four weeks, and then increased steadily from 67 to 124 Gm., showing a gain of 57 Gm. in less than three weeks. The effect of the vitamin addition is much more rapid as to visible improvement in the weight of the animal than in respect to the blood. *If vitamin exhaustion has once taken place, the regeneration in the hematopoietic system trails behind the regeneration in the other organs* if measured by the count of the erythrocytes and the determination of the hemoglobin. But the microscopic morphologic study of the blood at this time shows that most lively regeneration is proceeding in the bone marrow, for polychromatic basophilic erythrocytes appear in the blood as soon as the regeneration begins. The polychromatic young cells increase steadily in number four to five weeks after vitamin A has been first added to the diet, which until then has been vitamin free. Some of the polychromatic cells, and a few of the other orthochromatic erythrocytes, are considerably larger than the normal average cells (macrocytes). The hemoglobin and erythrocytes show no changes, but the initial anemia persists. A definite leukopenia takes place.

Six weeks after vitamin A has been added to the diet, it is taken away again. But the hemoglobin and erythrocytes continue to increase, the bone marrow being undoubtedly still stimulated by the first addition of vitamin. Hemoglobin as well as red cells reaches about the same values as at the beginning of the experiment. Only the leukopenia persists, the leukocytes being about half as numerous as when the experiment started. All young immature polychromatic erythrocytes have disappeared from the blood. The weight of the animal three weeks after the vitamin had been removed again from the diet fell 43 Gm., and the animal seemed sick. A few days later mandibular abscess developed, which was drained. Vitamin A was now added again to the diet, this time in the form of cod liver oil, and the feeding was forced. The second addition of vitamin A to the diet led promptly to an accelerated new formation of blood cells in the bone marrow. The effect of the second removal of the vitamin A from the diet now became apparent. The hemoglobin examined nine days after the second addition of the vitamin and four weeks after the fat soluble A had been removed the second time had fallen from 16.6 to 12.2 Gm., and the erythrocytes from a maximum of 10,700,000 to 6,030,000. Very few basophilic polychromatic erythrocyte cells appeared in the blood film. One week later the hemoglobin had fallen to 9.3 Gm. and the erythrocytes to 4,970,000. The color index was above 1. The stained blood film showed a very marked polychromatophilia and definite anisocytosis, with many microcytes and macrocytes as well as erythroblasts of the normoblastic type. Four days later the blood showed a large number of normoblasts and a few megaloblasts; the polymorphonuclear leukocytes showed the extreme nuclear fragmentation found frequently in severe anemias. The accurate measurement of 500 erythrocytes when charted showed the type of curve described by Price-Jones[14] as characteristic of pernicious anemia. These experimental data seem to prove that the addition of a small quantity of vitamin A to the diet of an animal, long depleted in its vitamin reserve, brings about rapid formation of new red blood cells. The rate and intensity of this regeneration is, within reasonable limits, a function of the quantity of the vitamin added. Blood regeneration cannot take place without the presence of vitamin A. Rats while in a state of chronic vitamin A deficiency develop a severe anemia, which, after ample vitamins are added to the diet, shows the typical blood picture of an early Addison anemia, characterized by all the features of rapid blood regeneration.

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[14] Price-Jones, C.: J. Path. & Bact. **25**: 487 (Oct.) 1922; Guys Hosp. Rep. **74**: 10 (Jan.) 1924.

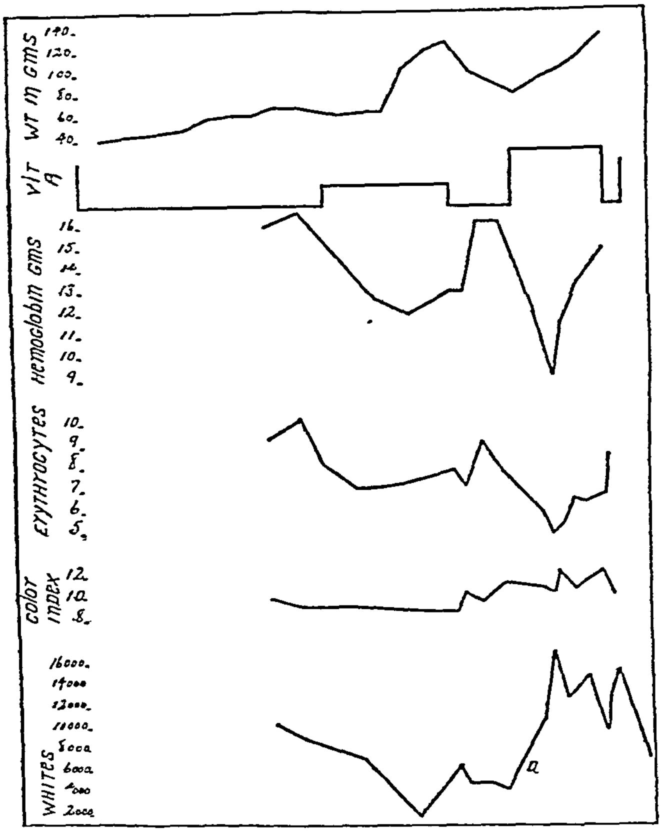

Chart 3.—Observations on rat 15: *a*, abscess.

GENERAL CONSIDERATION AND TREATMENT

On the basis of our clinical observations, experimental work and theoretical considerations based on a study of the problem of chronic vitamin underfeeding, we would suggest that vitamin A deficiency and underfeeding may be a factor of primordial importance in the production of severe anemias of children and adults. We believe that the pernicious anemia of the megaloblastic as well as aplastic type may be, at least in some cases, intimately related to a deficiency of vitamin A. This deficiency in the vitamin content of the body cells might be produced in a variety of ways: first, through chronic underfeeding with the essential food stuffs over a period of many years; second, through long standing infections which might be able to deplete the body of its vitamin reserve stock. On the other hand, a vicious cycle may be established through the fact that vitamin exhaustion opens the way to infection and intoxication through increased permeability of all the mucous membranes of the body.

It is clear that if this concept of the pathogenesis of pernicious anemia and other severe anemias is correct, the treatment of the disease must be based on a replenishing and restocking of the body with vitamins through a proper dietary management.

The diet used must not only be ample and of high caloric value but must be especially rich in vitamin A as well as vitamins B and C. Vitamin A is first supplied to the anemic patient by giving cod liver oil, 5 cc., four times daily. Butter (not oleomargarin), five or six pats, should be taken daily on the vegetables and on bread. Whole wheat bread, made with milk instead of water, is richer in vitamins A and B than white bread. Whole milk and cream are valuable foods, since they contain, especially, in summer, a good deal of all three vitamins A, B and C. At least six glasses of milk and one-half pint of cream should be drunk each day. Eggs (the yolk) are rich in vitamin A and contain also B. Vegetables that should be taken daily are tomatoes, fresh, stewed or canned. They are a supreme source of vitamin B and C and contain also A in smaller amounts. Then spinach (A, B); lettuce (A, B, C); cabbage (fresh raw, A, B, C); carrots (A. B, C). In addition or as substitutes may be eaten: fresh string beans (A, B, C); Swiss chard (A, B); dandelion greens (A, B); cauliflower (A, B, C); endive (A, C); peas (A, B); sweet potatoes (A, B), and hubbard squash (A). Fruits should be taken daily to furnish plenty of vitamin A and to a lesser degree A and B. The best fruits for this purpose are oranges, lemon juice, grapefruit, raspberries (canned or fresh) and apples (preferably as sauce).

Of meats, liver and kidney contain the largest amount of vitamins A and B and probably also some C. Sweetbreads and brains stand next in richness of vitamins. Beefsteak or any other part of the skeletal muscle is much inferior in vitamin content.

In table 2, the quantity and best kinds of food to be taken in twenty-four hours are given in condensed form.

In addition, the patient should take, immediately before each meal, 30 drops of dilute hydrochloric acid in water, orange juice or lemonade. The same amount should be taken during the meal and the same amount immediately after the meal. It should be taken slowly through a glass tube. Later on, when the patient is accustomed to these quantities, 300 cc. of a 0.1 to 0.2 per cent acid solution is introduced from fifteen to thirty minutes before each meal by means of a Rehfuss tube, which may be passed into the esophagus by the patient himself. If the patient complains of burning in the stomach after taking the acid, the amount taken or strength must be decreased. Six yeast tab-

Table 2—*Quantity of Foods to be Taken for Twenty-four Hours*

	Gm.	Carbohydrate	Protein	Fat	Calories
Cod liver oil, 5 cc., four times daily	20	..	.	20	180
Butter, 5 or 6 10 Gm. prints	60	..	0.6	51	461
Milk, 6 glasses (250 cc each)	1,500	75	45	60	1,020
Cream, 3 oz. (100 cc.).	100	5	3	22	220
Egg yolk (or whole egg), 2 or 3	150	..	25	6	234
Orange (or fresh prepared orange juice)	100	10	1	0	44
Tomatoes (raw or canned)	100	3	1	0	16
Lettuce (or raw cabbage)	100	3	1	0	16
Spinach (or carrots)	100	3	1	0	16
Meat (liver, kidney, sweetbread or brain)	100	..	20	14	211
Bread (whole wheat made with milk)	100	..	..	..	245
Total		90	93	173	2,676

lets, equal to 200 mg. of concentrated yeast extract, are to be taken each day, two with each meal.

It is too early to make any premature claims regarding the efficiency of this dietetic management of patients suffering from pernicious anemia. A disease whose life history extends frequently over a period of years from the day the diagnosis is established, and which by its very nature is characterized by remissions of marked spontaneous improvement and relapses, would invite fallacies and error of judgment on the part of an overenthusiastic therapeutist. We therefore shall content ourselves at this time with the statement that it is our impression that the dietetic treatment of pernicious anemia which we have outlined seems to be of benefit to patients suffering from anemia. The future alone will decide whether these benefits are of the nature of a permanent cure.

CONCLUSIONS

1. Blood regeneration cannot take place without the presence of vitamin A.
2. The addition of vitamin A to the diet of animals, long depleted in their vitamin A reserve, brings about rapid formation of new blood cells.
3. The rate and intensity of the blood regeneration is a function of the quantity of vitamin A added.
4. A condition similar to human pernicious anemia has been produced in experimental animals.
5. A definite relationship exists between a state of chronic vitamin deficiency and certain anemias.
6. The routine use of a rationally balanced diet which has proved itself thus far of decided value in the blood regeneration of patients suffering from severe anemias, aplastic as well as erythroblastic, is the most promising procedure in the treatment of certain anemias, especially pernicious anemia.

IS TRACHOMA A DEFICIENCY DISEASE?

AN HYPOTHESIS FOR PUBLIC HEALTH CONSIDERATION *

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NEW YORK

Trachoma was by regulation of the Unites States Public Health and Marine Hospital Service declared "a dangerous contagious disease" in 1897. Under this regulation, operating at all ports of entry since 1899, many undesirable immigrants have been excluded who, if admitted, were considered likely to become public charges. The ruling was a commendable one for this reason alone. Health officials almost without question accepted this ruling. State after state made this "dangerous contagious disease" reportable. The movements of those affected with trachoma have often been limited as if this regulation were literally true. Has the time not come for state health officials to reconsider the facts with regard to trachoma, its contagiousness and its epidemiology? Is it possible that trachoma may be primarily a deficiency disease?

SYMPTOMS AND CURE

Trachoma is the name given a pathologic condition of the conjunctival tissues, usually first noted as a marked folliculosis in the lining of the upper lid with a thickening, followed by marked subepithelial inflammation of these tissues. As the pathologic condition progresses, the thickening and inflammatory evidence may extend even to the tarsus. The lining membrane of both lids may become involved. The normal subepithelial lymphoid structures seem to multiply almost indefinitely, and with this overgrowth and encroachment the surface epithelium changes in character and becomes thin, while the papillae project above the surface. Later, the meibomian glands become involved.

The lymph follicles, histologically, are apparently lymphoid cells massed and sometimes in orderly arrangement, with skeletal connective tissue framework and trabeculae carrying blood vessels and capillaries. When the multiplication and overgrowth of follicular tissue crowd the epithelium, the thinned layer separates at points through which weeps material from broken down follicles. Around these weeping points granulations begin, many hundreds of such granulations being noted in this stage of marked cases of trachoma, the granulations being miniature red raspberry-like elevations.

Usually up to this stage, that is, of the formation of granulation, no great discomfort beyond itching has been experienced. With the formation of the rough granulations in the palpebral area, trauma to the bulbar conjunctiva and to the cornea is constant with every wink or rotation of the eye. These injuries from continuous rasping of the globe are responsible for the ulcerations and for the pannus coming late in the disease.

With the irritation of the lid membranes and subepithelial tissues and the destructive process in the follicles, kept up for long periods of time, the inevitable happens. The new cells infiltrated during recurring inflammatory processes organize just as all new tissue organizes. Scarring and contraction result. It is the late organization and contraction stage in the tissue that brings deformities, such as the turning of the lids inward to such an extent that the lashes rake the globe continuously or, through thickening, make it impossible to close the eye.

Trauma in the granular stage is heightened by the inescapable urge to rub the eye. Trauma is often intensified by intermittent infection of known bacteria, Koch-Weeks infection, Morax-Axenfeld infection and pneumococci, and the whole category of known pathologic eye flora find invasion easier. Some of these bacteria, the Morax-Axenfeld group, in the judgment of experienced ophthalmologists, notably MacCallan, hasten certain stages of trachoma.

The productive discharges seen in various stages of trachoma are generally believed nowadays to be caused by the destructive action of miscellaneous invading bacteria.

Trachoma is slow in progress. A period of years usually elapses between the overdevelopment of lymph follicles in the lids and their breakdown, and still additional time, often a period of years, is required for enough infiltration of new cells to form the later scar tissue.

Treatment, both locally and systemically, sometimes operative in the follicular and early granular stages, may result in cure. Perhaps many spontaneous recoveries occur. In the late stages, extensive cosmetic surgery may be required. When the disease has reached the roughening stage of the palpebral conjunctiva, and especially when ulceration near the cornea has occurred or pannus has begun, impairment of vision is inevitable.

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* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

Lid deformity or even blindness may follow in a large number of cases and is always preceded by long periods of suffering.

GEOGRAPHIC DISTRIBUTION

Geographically, trachoma is one of the widespread scourges of the earth. Egypt and Palestine are said to be the countries worst afflicted. China, especially in the interior of the country, has a very high percentage of trachoma. The disease is extremely common in all northern Russia and in Siberian Russia; in that section of Hungary around Galicia; in East and West Prussia; in Poland, and to a certain extent throughout all the Balkan states. The disease is common in Japan. It is prevalent in northern Brazil.

Many sections of the United States are affected. Surveys by Taliaferro Clark, J. W. Schereschewsky, McMullen, and others of the Public Health Service, indicate a high incidence of trachoma among native white people in the mountainous sections of eastern Kentucky, West Virginia, Virginia, Tennessee and the Carolinas, while Wilder's studies indicate an undue prevalence in southern Illinois. The disease is prevalent in southern Indiana. In 1912, a survey among the American Indians, made by thirteen officers of the U. S. Public Health Service in thirty states, indicated 22 per cent affected among some 59,000 examined. This survey covered definite sections or schools of nearly all the states in which the Indian population amounts to anything. A recent estimate by the Bureau of Indian Affairs places the incidence at about 10 per cent of the entire 300,000 Indian population.

In the Old World, and to a certain extent in the southern sections of this country, trachoma has been frequently found in children's institutions. In the southern part of the United States, it has been reported both in negro and in white orphan asylums.

CONTAGIOUSNESS AND TRANSMISSIBILITY

A review of the Old World literature, as epitomized in Boldt's book, translated by Parsons in England in 1904, and a review of that little volume of MacCallan's published in England in 1913, make evident the confusion in the older literature. The pathologic condition which we recognize as trachoma and the other forms of transmissible eye infections recognizable since the days of modern bacteriology were not differentiated. Because of this confusion, much of the literature going back to the use of the term "lippitudo" in the time of Hippocrates is misleading, and all older statements need to be evaluated by health authorities, just as it was necessary to evaluate older statistical statements about smallpox during the days when it was not differentiated from measles, or typhoid in the days when it was not differentiated from typhus and malarial fevers.

Only within comparatively recent years may we judge the influence of the various miscellaneous infections and determine approximately how much of that which was transmitted may have been a known recognizable infection, and thus, by exclusion, estimate how much was trachoma.

The fact that at Ellis Island, where in the early days of exclusion they handled several hundred cases of trachoma every year (in 1899, 1900 and 1901) and where they have never been without some trachoma, except perhaps during the late war, no physician, nurse or orderly has seemed to contract the disease, and the further fact that, even in the early days when a number of patients with trachoma reached Ellis Island by long steerage travel from eastern Mediterranean ports, no outbreaks of this dangerous infectious disease occurred in crossing, make one question whether we have not greatly overrated infectiousness and transmissibility for the purpose of getting easy control over each case.

It is true that a report of an outbreak was made by Schereschewsky of the Public Health Service in February, 1907, at Baltimore, where sixty-seven persons who were occupants of a compartment in passage with four trachomatous individuals developed an acute eye disease. In 1910, Clark reported thirty-five cases, all acute, on one vessel arriving at Philadelphia, and twenty-seven on another. If all of these acute eye troubles had been kept under observation until the classic later symptoms of trachoma had developed, there could have been no doubt of the diagnosis. To keep immigrants at quarantine station for a period of years is not practicable.

While I was in the heart of the Ozarks in Springfield, Greene County, Mo. some time in May, 1924, in conference with Dr. Kerr, the work of the traveling clinics dealing with trachoma and the follow-up work was discussed. We could not resist at the time contrasting the prevalence of trachoma and its alleged dangers in this section of Missouri with its apparent lack of danger to house contacts in the coal fields of Pennsylvania, where it was known that a number of trachomatous adults and children had gained residence prior to the enforcement of the exclusion regulation at ports of entry. At this time the need of home environmental studies and health habit studies was stressed, with the need of follow-up work by home health teachers.

In November, 1925, it seemed desirable to review the literature of trachoma rather thoroughly. This study was begun because of contemplated cooperative effort between the National Committee for the Prevention of Blindness and the Committee on Conservation of Vision of the State and Provincial Health Authorities of North America. It was desirable to know the size of the problem, the facts concerning the dangers of the disease and to determine some logical method of attack, if aggressive measures were to be undertaken.

The first plans were for a review of such evidence of transmissibility and contagiousness as was available and then to review such epidemiologic studies as might be matters of record. To our great amazement, we were not able to find in the published literature of trachoma any convincing evidence either of dangerous contagiousness or of the successful transmission of the disease.

What was still more surprising, we were not able to locate in published literature a single well planned and well carried out epidemiologic study of trachoma. Studies of etiology with some alleged finding of causative agents were frequently found in the literature, but as is well known to the medical profession today, all of these alleged causative agents have been completely discredited by later studies.

There are many published reports of surveys of prevalence of trachoma available, and in several instances—notably those of Schereschewsky and Clark—of return surveys after an interval of years, the later survey apparently showing an increase of prevalence of the disease occurring in the two year interval. The surveys recorded, however, fail to review the various factors that might permit the disease to develop, and they fail to evaluate such factors as are elemental in epidemiologic research. Practically all of these published studies contain statements of contagiousness that might well have been copied from the writing of Hippocrates or from any subsequent writer.

REMOVING SPLINTS AND BRACES FROM THE PATIENT *

EMIL S. GEIST, M.D.
MINNEAPOLIS

Our literature is full of directions as to how and when to put the appliance on the patient. It is practically silent about removing it, and yet it requires good judgment to know when to divorce the patient from his splint, be it made of plaster, wood, leather or steel. I often inform my patient that it is easier to tell when to put on a brace than when to take it off.

It is the modern and laudable tendency of orthopedic surgery to get away from the brace. As a result of this tendency, we are in possession today of the various arthrodesing and fusing operations, of the different tendon plasties and joint reconstruction operations—of operations to restore balance. But these operations, which are designed to free the patient from brace thraldom, generally require splints and braces in their after-treatment. I have seen what might have been good operative results spoiled by injudicious removal of braces.

As long as we practice orthopedic surgery, we shall need to use splints. A brace does harm when it does no good. It must therefore be removed at the proper time. What book tells one the proper time has arrived? The literature of orthopedic surgery is for the most part silent as to when and how to remove a given splint. The reason for this is that it is difficult to lay down rules. Nevertheless, our orthopedic textbooks are too lamentably silent as to this phase. Some few of them dismiss the subject with a curt sentence: "The cast or brace should be worn as short a time as possible." It would seem that by now enough statistical material ought to be available to tell at least the average length of time of the cast and splint period in ordinary orthopedic conditions, as, for instance, after operations; in static disturbances of the spine and feet, and in chronic bone and joint infections.

Occasionally and rarely the writer of an orthopedic textbook will mention the subject. Thus, Whitman in discussing his foot brace devotes four and a half pages to the mechanics and application of his brace and two and a half lines to its removal from the patient—and the time and method of the removal of the brace in the treatment of weak-foot is important. The writer of the average orthopedic textbook, however, as a rule practically ignores the matter of brace removal from cover to cover.

The orthopedic surgeon of wide experience has in the course of time no doubt developed his own technic as to time and method of removing a brace. Little of this information has seeped into our literature, and what there is is hard to find. This article is then primarily a plea to the authors of future textbooks on orthopedic surgery to give more attention to the duration of disease and injury, especially as it affects the discontinuance of apparatus.

In the case of fractures, the situation is slightly, but not much, better. It is surprising that recent and excellent textbooks on the subject practically ignore the time element in the healing of fractures, especially as it affects the removal of splints.

It is rare, indeed, that in the search for information one comes across a definite, direct instruction such as the following in Sir Robert Jones' "Orthopedic Surgery of Injuries":

> The length of time required for the complete union of fractured bones varies. In one case the process of healing may be completed in eight weeks, but in another case of fracture of the same bone, the time required may be five or six months. There is usually one clinical sign on which reliance can be placed, and that is tenderness at the site of fracture. It may be stated that, as a rule, the presence of tenderness over the callus at the site of fracture is a definite indication that the callus is still soft and will yield on the application of strain.

In these days of industrial and compensation surgery, the foregoing rule, which is based on a subjective sign, may be found wanting. Nevertheless, it is one of the few instructions to be found in fracture textbooks. As a rule, they are silent as to length of time of the healing period in various locations and consequent ablation of supports.

The German textbooks on industrial surgery (Kauffman, Thiem) give some fairly serviceable figures. They are, however, based on old prewar statistics of twenty or thirty years ago. We must therefore welcome the table compiled by my friend Dr. F. E. Clough of Lead, S. D., which, though small, is accurate and definite, and is here reproduced.

Time Sheet for Fractured Legs in 155 Consecutive Cases (Clough)

	Total Cases Treated	Days Lost from Work
Tibia	16	98
Fibula	36	49
Both bones	62	132
Pott's disease	16	69
Internal malleolus	14	44
External malleolus	8	46
Both malleoli	3	116
All cases	155	89
All cases, simple		63
All cases, simple comminuted		97
All cases, compound comminuted		161
Both bones, simple		110
Both bones, simple comminuted		105
Both bones, compound comminuted		164

The syllabus adopted at the conference of the Massachusetts General Hospital (1922), entitled "Outline of Treatment of Fractures," is the only modern, reliable guide that lays stress on this subject.

It is my plea that the authors of future textbooks on fractures compile and publish directions and statistics on this important feature of fracture care.

When we have decided the time to remove the splint from the patient, the question arises, How shall it be done? No doubt most of my orthopedic confrères of large experiences have for a long time practiced the simple suggestion that I here recommend. If so, it apparently is not to be found in print. The rule is simple: The use of a cast, brace or other appliance should not be discontinued abruptly; the patient should first be allowed to go without his apparatus for one hour daily for a week. The time should then be increased by making it two hours for the second week, three hours for the third week and so on. Frequently the process should be slowed down so that the gradual and definite removal of the appliance occupies a few months. This "hourly" method has several advantages: The patient does not feel that treatment is concluded as he is apt to if the brace is abruptly removed; he reports to the surgeon at stated intervals, at which times untoward symptoms of recurrence or relapse can be recognized. This method has proved especially valuable in those cases in which the discontinuance of the brace throws stress and strain on muscular groups that we are trying to "build up," as in infantile paralysis, weak-foot and scoliosis.

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* Read before the Section on Orthopedic Surgery at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

CONCLUSION

Whenever a patient is informed that it is necessary for him to wear an appliance, his first question is, "Doctor, how long must I wear it?" I hope that future textbooks on orthopedic surgery and on fractures will help us to answer this query. The gradual "hourly" method of removal of the splint from the patient is of practical value.

1010 Yeates Building.

ABSTRACT OF DISCUSSION

Dr. Henry W. Meyerding, Rochester, Minn.: The question of when we are to remove splints and braces concerns almost every practitioner of medicine and surgery, more especially, however, those who deal with problems or orthopedic surgery. I do not believe it will ever be possible to lay down any definite set of rules as to when or exactly how long an apparatus is to be worn. The age, the type of fracture, the complications, in fact the patient's bone forming capacity must be all taken into consideration. It would be extremely interesting, however, as brought out by Dr. Geist, to have more detailed reports, especially from industrial surgeons, who deal with a great mass of the fracture work of this country. This material gathered together would give us valuable information as to how long we may expect to continue fixation. I do not have a great many acute fractures to treat. The work that I am concerned with deals more with nonunion and malunion. A study of the results of fractures that come to us indicates a lack of proper and adequate fixation in cases of nonunion. I believe that it is one of the important factors in the causation of nonunion. As to how long we are to keep fixation up following fusion operations or in bone grafting operations, I have a simple way of going at it. I keep fixation on until I feel that the part operated on has sufficient strength to withstand the stress and strain put on a normal bone in that position. In other words, a bone graft in the tibia, femur, humerus or forearm may unite and seem definitely fused into position, but it may not have union across the fragment of the bone fractured. I have seen over and over again excellent surgery with poor end-results because of improper and inadequate postoperative fixation.

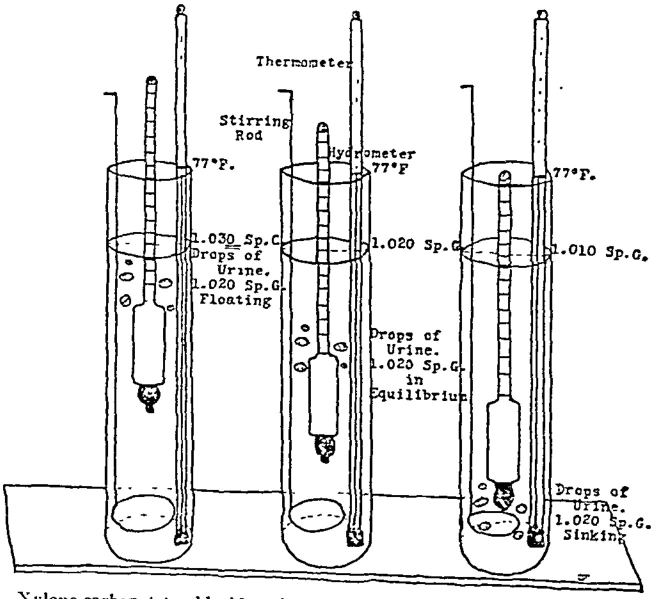
Dr. F. J. Gaenslen, Milwaukee: Dr. Geist makes two specific points: that our textbooks do not give sufficient guidance either as to the proper time for removal of splints in various directions or as to the manner of such removal. I take it that he has worked out his own plan in his work and that he is not coming here for information on these points. He is, however, making a plea that the writers of textbooks and the contributors to orthopedic literature will lay down proper principles covering the deficiency indicated for the guidance of those who are not in constant touch with the work. Let us assume that a child with knee joint tuberculosis has had fixation of a joint for a long period; that so far as clinical symptoms are concerned there is arrest of the disease. How long is splint fixation to continue? There are no directions to be found in the textbooks. Sir Robert Jones in his teachings has often called attention to the fact that it is more difficult to say when a joint is healed than when it is affected by tuberculous disease. No definite time limit for fixation can be set; but, when brace protection is discontinued, the patient requires especially close attention so that the very earliest signs of recurrence of disease may be noted. This should be impressed on both patients and physicians. Part-time protection in this type of case is especially indicated. A patient may be able to get about freely and without danger so long as he is wearing the brace; but if he strains a tuberculous joint in which the disease has only recently become quiescent, serious difficulty may result. The question when to discard fixation in such a case resolves itself into a discussion of signs of recurrence and early recognition of these signs. Among the most important of these are development of deformity or increase of existing deformity. For this reason, careful records of the degree of deformity are necessary for reference and comparison. In the field of fractures, much more definite rules can be laid down. All of us have seen patients with Colles' fractures continuing with splints for from four to six weeks. I believe this is entirely too long. Continuous splint fixation for fourteen days is probably all that is necessary. The patient may be encouraged to use his hand for writing, turning pages or similar work without protection at an early period, while a night splint may be advisable for several weeks longer. In other words, proper judgment must be exercised so that the part be not subjected to dangerous strain or, on the other hand, to prolonged fixation.

Clinical Notes, Suggestions and New Instruments

A SIMPLIFIED METHOD FOR DETERMINATION OF THE SPECIFIC GRAVITY OF A FEW DROPS OF URINE

John Kirkpatrick, M.D., and David H. Kling, M.D.,
Los Angeles

Estimating the specific gravity of a few drops of urine has always been a difficult problem. This difficulty arises more particularly during ureteral catheterization, when only a few drops of urine can be obtained. By the method described here, the specific gravity of a few drops of urine from each kidney can be determined. It will be found applicable in estimating the specific gravity of small samples of voided urine.



Xylene-carbon tetrachloride mixture representing method for estimating specific gravity of a few drops of urine.

This method for the determination of the specific gravity of urine is made possible by the utilization of a non-water-soluble mixture. We use for this purpose a mixture of a high specific gravity chemical (carbon tetrachloride), and a low one (xylene). It can be prepared quickly and cheaply from materials ordinarily at hand in the laboratory.

Hammerschlag[1] has adapted this principle to determine the specific gravity of blood. But he has used a mixture of chloroform and benzine. We have found this objectionable because of the rapidity with which these two chemicals evaporate, with consequent change in the specific gravity of the mixture. The chemicals that we use evaporate very slowly, and there is relatively little change in the specific gravity of the mixture.

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[1] Hammerschlag: Ztschr. f. klin. Med. 20: 444, 1892.

The following is the method. It will be found easy to apply. In a urometer jar, in the proportion of 1 : 3.5, carbon tetrachloride and xylene, respectively, are placed; for example, 10 cc. of the former and 35 cc. of the latter. They are mixed thoroughly by stirring. A useful stirring rod is an ordinary applicator stick. The resultant specific gravity will be 1.020 at 77 F. For each degree change of temperature below this standard, one must add to the urometer reading 0.0005 degree and, vice versa, if above this reading, one must subtract 0.0005 degree. That is, for each 2 degrees change in temperature, the standard urometer scale changes 0.001 degree.

A drop of urine is let fall into this mixture. If the drop sinks to the bottom, it must be higher in specific gravity than the mixture. Therefore, the specific gravity of the mixture must be changed to equilibrium by adding carbon tetrachloride, drop by drop, slowly with adequate stirring, until the drop of urine will have a distinct tendency neither to rise nor to fall. This indicates equilibrium of the mixture. The reading on the urometer scale will be equivalent to the specific gravity of the urine, after necessary correction for temperature difference has been made. If the drop of urine floats, the specific gravity of the mixture may be depressed by the opposite procedure of adding xylene in small amounts, until the drop of urine has a distinct tendency neither to rise nor to fall. Correct results depend entirely on adequate stirring of the mixture and temperature corrections.

The mixture may be used repeatedly. However, it is best to filter off the urine after its specific gravity has been determined.

916 Pacific Mutual Building.

KEROSENE POISONING

Orville Barbour, M.D., Peoria, Ill.

During the last six years I have seen four cases of kerosene poisoning. One of the children died within a few minutes after medical aid was summoned, and no laboratory data could be obtained. However, a noticeable feature of the case was the bright cherry red color of the lips. This persisted until after death. Two of the patients did not get enough kerosene to cause any alarming symptoms. As I had access to laboratory and hospital facilities with the fourth case, I made an attempt to obtain some definite information on this condition.

REPORT OF CASE

A white boy, aged 15 months, admitted to the Methodist Hospital at 4 p. m., May 24, 1926, had drunk a portion of 6 ounces of kerosene, six hours previously. As the cup was tipped over when he was found, it was impossible to determine just how much he had swallowed.

The child was in a comatose condition, with shallow respirations, and a rapid feeble pulse. The lips were of a cherry red, and the skin had a pinkish tinge. The rectal temperature was 101.6 F.; pulse, 160; respiration, 40.

Lavage yielded a large amount of yellow emesis, with casein curds and a pronounced odor of kerosene. An enema was expelled with a large amount of fecal matter and a marked odor of kerosene. As the boy's condition showed no improvement, he was given 7½ grains (0.5 Gm.) of caffeine sodiobenzoate hypodermically and an ounce (30 cc.) of castor oil by mouth, and was placed in a hot wet pack for thirty minutes.

One hour later he was still comatose. His temperature had risen a degree higher, and his pulse rate had increased to 180. He was again placed in a hot wet pack, and kept there for twenty minutes. Following this, his temperature dropped a degree, and he seemed somewhat better. The contemplated blood letting and blood transfusion were postponed, and were later deemed unnecessary. The child's general condition continued to improve, and he was discharged from the hospital forty-eight hours after admittance, apparently feeling as well as ever.

Laboratory examination of the urine, May 24 and 25, was negative. May 26, there was a trace of sugar. The urine spectrum was negative for methemoglobin.

Blood Examinations

	Hemoglobin	Erythrocytes	Leukocytes	Polymorphonuclears	Large Lymphocytes	Small Lymphocytes	Eosinophils	Transitionals
5-24-26, 5 p. m....	58	4,900,000	29,500	81%	0.5%	17%	0.4	0.6
5-25-26, 7 a. m....	58	4,900,000	33,000	80%	0.8%	18%	0.4	0.6
5-26-26, 7 a. m....	58	4,900,000	18,000	71%	3.0%	18%	2.7	3.2

The blood spectrum showed methemoglobin.

COMMENT

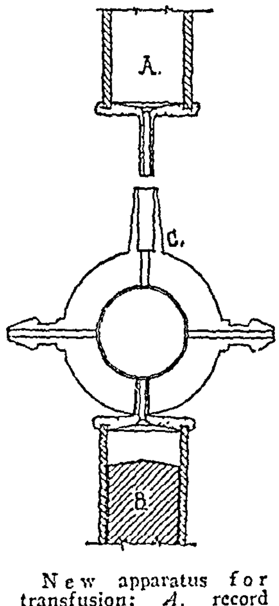
The clinical and blood picture of this condition is similar to that produced by illuminating gas. In severe cases, blood letting and blood transfusion would seem to be indicated.

627 Jefferson Building.

A NEW METHOD OF BLOOD TRANSFUSION*

James J. Donahue, M.D., St. Louis

A minor alteration in the Unger blood transfusion apparatus now in general use makes possible a radical change in the method of operation, having important advantages. This consists merely in discarding the rubber tubing and adapter that are attached to the nipple at the saline opening. In place of this nipple, a female adapter made from the hilt of a record cannula is brazed strongly to the machine in line with the port *C*, as shown in the accompanying illustration. This new attachment receives the tip of a record syringe.



New apparatus for transfusion: *A*, record syringe; *B*, original record syringe; *C*, new attachment for receiving record syringe.

The change from the Unger method of operation is as follows: No saline solution is employed during the transfusion, and whole blood only is used. A record syringe, *A*, operates similarly to the original record syringe, *B*, of the Unger method and works in opposite phase to it. While *A* is filled from the donor, *B* discharges into the recipient, and the two operations are simultaneous. At their completion, the valve is turned and the operation is reversed. Syringe *B* is then filled from the donor, while syringe *A* is discharged into the recipient.

Except during the instant required to turn the valve and reverse the stroke, a constant flow of whole undiluted blood passes from the donor to the recipient. Thus, there is no stagnation in the stream during the reversal of the flow and no opportunity for clotting. The transfusion time obviously may be reduced by one half, if desired. The blood remains outside the natural circulation about twelve or fourteen seconds when 20 cc. syringes are used, and six or eight seconds with 10 cc. syringes. The latter are used if it is desired to transfuse slowly.

This method has been found entirely satisfactory, and it is believed to come closer than any other to the ideal of a rapid, harmless transfusion of whole blood.

600 South Kingshighway.

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* From the Department of Internal Medicine, Washington University School of Medicine, and Barnes Hospital.

Special Article

THE TECHNIC OF MEDICATION

A SERIES OF ARTICLES ON THE METHODS OF PRESCRIBING AND PREPARING, THE INDICATIONS FOR, AND THE USES OF VARIOUS MEDICAMENTS *

BERNARD FANTUS, M.D.
Associate Clinical Professor of Medicine, Rush Medical College
CHICAGO

(Continued from page 413)

INDICATIONS FOR INTRAVENOUS THERAPY

4. *Parenteral Alterative*[142] *Therapy.*—This finds in intravenous introduction the highest degree of its development. Protein bodies that would be digested into amino acids on peroral administration exert an entirely different effect when introduced parenterally. It is not always necessary that the agent be introduced intravenously; intramuscular injection of milk, for instance, produces similar results and may sometimes be preferable. It must be admitted, however, that intravenous injection of proteins and certain other bodies yields a purer omnicellular alterative action than any local injection possibly can, complicated as such always must be by local irritative phenomena which in themselves may become quite distressful. The chief indication for such general alterative therapy is in chronic diseases that have not responded to organotropic remedies, and in acute infections in which specific therapy is not available. Just as in chronic localized affections, as of the skin, appropriate irritation may lead to such alteration in local nutrition as to expedite healing, so in certain chronic generalized or even localized disturbances that cannot be reached by local irritation an irritation of the cells in general, to which the sensitized disease cells respond most readily, may result in a healing tendency. Furthermore, as in skin disease, a soothing remedy that had previously failed may succeed after irritation, so a remedy that was previously not successful may expedite the final cure after general protoplasm stimulation, as by salicylates in a chronic arthritis.

The antibacterial action of this form of therapy is chiefly to be explained by the fact that the foreign protein is rendered innocuous to the system by appealing to the same mechanism that deals with the proteins of bacterial infection in the development of immunity. The term "nonspecific immunization" has therefore been applied to it.

The general indications given for parenteral alterative therapy must not be interpreted too broadly, for these agents may harm as well as help. Especially must we visualize the fact that we are dealing here with a whip to which the diseased organism must be capable of responding, if therapeutic results are to be obtained. In cachetic patients for instance, such response may be impossible. As excessive dosage may cause paralysis instead of stimulation of nutritive functions, collapse instead of fever, it is important to adjust the dosage so as to use the minimal effective one ("Schwellenreiztherapie," Zimmer), which may vary greatly in different cases.

The effects of parenteral alterative therapy are in general diphasic: rise in temperature followed by antipyretic action; decrease in the number of leukocytes, followed by leukocytosis; aggravation of local inflammatory phenomena followed by amelioration; diminution followed by increase in immunity; increased clotting power of the blood, which may be preceded by a decrease; and a temporary lessening of allergy in such conditions as asthma or eczema may be secured by appropriate dosage, while excessive dosage may increase it. These facts will serve to suggest at once the wide field of possible application, as well as the danger from wrongly applied or improperly controlled treatment of this kind.

To avoid doing harm, the effect of each injection should be studied by pulse and temperature observations and urine as well as blood examinations before and after the injection, and another injection should *not* be administered until the effect of the previous one has subsided. It is an error not to combine with this other forms of treatment likely to be useful. Thus salicylates or neocinchophen, which may have failed previously, may succeed when used in connection with proteotherapy.

The selection among the almost innumerable agents that have been proposed for this purpose might be made according to certain principles. First among these should be constancy in chemical and physical qualities. This cannot be secured with peptone, animal serum or bacterial vaccine. A simple and pure protein would be preferable. Simpler chemical bodies, such as certain elements in colloidal form, ought to be still more desirable. Indeed, in distilled water, which on intravenous injection is capable of producing protein shock by hemolysis, we probably have the simplest of them all. Of course, when a more or less specific antiserum or vaccine is available, this would naturally be preferred to any other substance.

Differences in degree of action must, however, be recognized in connection with these measures. Perhaps the mildest degree of nonspecific proteotherapy is being carried on in so-called autoserotherapy, the reinjection of blood serum or of serous effusion, or in "autohemotherapy," the intramuscular injection of the patient's own blood or its intravenous injection, after it has been modified, as by mixing with 5 cc. of a 5 to 10 per cent sodium chloride solution. In these instances the altered blood or serum proteins become "foreign" protein. A more severe degree of reaction is obtainable from intramuscular injection of 10 cc. of sterilized milk or of 1 cc. of 0.1 to 1 per cent sulphur in oil, or the intravenous injection of typhoid vaccine, which it seems is required to obtain definite results in gonorrheal or rheumatic conditions. The extreme degree of parenteral alterative therapy is secured from active infection with such parasites as those of malaria or relapsing fever which has secured a certain amount of success in early general paralysis and in tabes. Here, as for other purposes, intramuscular administration, as it is less dangerous, even though more painful, should be preferred to intravenous injection whenever otherwise the same effects can be secured.

5. *When Other Methods Do Not Give Desired Action.*—Intravenous administration is indicated for the introduction of medicaments when the desired

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* This is the thirty-third of a series of articles on "The Technic of Medication." When completed, the articles will be assembled in book form.

[142] This term, it seems, might usefully be resurrected from the partial oblivion into which it has sunk to designate the change we aim to produce in the reactivity of the cells in general that has of late been discussed under such titles as "plasma activation," "ergotropic" and "nonspecific protein therapy." For this and a number of other concepts developed here, the author is indebted to Reinhard von den Velden (Handbuch der praktischen Therapie, Leipzig, Barth, 1926), who calls it "Umstimmungs Therapie."

action can be obtained only in this manner. The intravenous administration of epinephrine is a good example. This substance affects blood pressure markedly only when given intravenously. It is then the strongest analeptic we possess. So powerful, indeed, is its effect when thus given that it is dangerous unless administered in considerable dilution and very slowly. Thus, Ulrich and Rypins [143] experienced so alarming a reaction after the injection of 0.33 cc. of 1 : 1,000 epinephrine chloride in 5 cc. of warm physiologic sodium chloride solution that they consider this dose as probably the maximum that can be tolerated in safety by human subjects. As epinephrine is rapidly destroyed in the circulation, it is really a mistake to speak of maximum dose. We should rather speak of a safe rate of injection. Straube [144] suggests its slow but continuous intravenous infusion, a method which Friedman [145] described more in detail, after seven years of favorable experience with it. He adds 1 cc. of 1 : 1,000 solution of epinephrine to 750 cc. of physiologic sodium chloride solution and allows from 20 to 200 drops a minute to flow into the vein. Such injection may be continued for hours, even days. In this manner sudden embarrassment of weakened circulation is avoided. The author noticed, however, that, in extreme cases, hypostatic pneumonia developed with remarkable frequency.

As previously noted under osmotherapy, hypertonic calcium infusion is endowed with a greater degree of hemostatic action than any other osmotherapeutic agent. It is generally employed for intravenous injection in inaccessible hemorrhage, in the form of a 10 per cent sterile solution of calcium chloride, of which from 5 to 10 cc. is injected, at about 103 F., two or three times daily. It is important that not a drop of the solution escape outside the vein. Should this mishap occur, it causes severe pain and may produce necrosis. Because of this danger, Seelig [146] advises the use of 50 cc. of 1 per cent solution, which does not produce necrosis even when it escapes outside the vein, rather than 5 cc. of a 10 per cent solution. These injections must be given very slowly, the slower the better, for the intravenous use of calcium chloride carries with it danger of producing collapse. Depression of blood pressure produced by the intravenous use of calcium, which was noted among others in animal experiments by Fleisher and Loeb,[147] may indeed be of considerable importance in the hemostatic action of these injections. Thus, Heubner and Rona report that "not a drop of blood could be obtained from incisions into the ear and but little on venesection, evidently due to low arterial pressure."

A special advantage from hypertonic calcium infusion is reported in connection with various forms of tuberculosis. Not only are such injections considered especially indicated in pulmonary hemorrhage, [148] but numerous reports indicate that it is of value in combating some of the other manifestations of tuberculosis when given every day or every other day [149]—the night sweats,[150] the vomiting, brought on by coughing,[151] and the diarrhea of intestinal tuberculosis.[152] However, the results are not constant and the mode of action is not clear. Calcium can hardly be considered to possess special etiotropic powers against tubercle bacilli. These injections seem to act chiefly in a symptomatic and perhaps restorative manner, possibly also by inducing "hemoclastic shock," when from 2 to 4 cc. of as strong as 50 per cent solution is injected, as advocated by Pellé.[153] This reaction is accomplished by a sensation as if hot water were being poured over the body. It lasts only a minute.

In view of the marked effect of calcium on the heart, which in some respects is like that of digitalis, Gustav Singer [154] advises the use of calcium preceding or together with digitalis administration. He believes that calcium sensitizes the heart to digitalis action so that the latter may act when it previously failed. Another indication for this combined therapy the author finds in cardiac decompensation accompanying hypertension, as calcium has a distinct tendency to slow the pulse and lower blood pressure. When giving a single dose preceding digitalis administration, the author employs 5 cc. of 10 per cent calcium chloride solution, or else he gives divided doses of 0.1 Gm. of calcium chloride daily or every other day. In serious cases he does not hesitate to combine the digitalis with calcium. He finds that the calcium improvement of the heart action is much more transient than that of digitalis. According to this experience, the warning sounded on the basis of an experiment by Loewi [155] against combination of calcium with digitalis is groundless, provided a sufficiently small dosage is used.

Theoretically it would seem that, if systemic antisepsis, either bacteriostatic or disinfectant action, could be secured, intravenous injection would be the method of choice. That this is not necessarily the case is shown by the fact that quinine and mercury, our oldest systemic antiseptics, have established their value in malaria and in syphilis, respectively, on peroral administration. Though arsphenamine is given intravenously by choice, the reason for this seems to be its local irritant action rather than essential condition for success. Of late, mercurochrome-220 soluble has been advocated for intravenous administration as a systemic antiseptic by H. H. Young [156] and his collaborators. In analyzing the reports of 255 cases, in some of which brilliant results have been obtained, Young admits, quoting Roeder and Judd, that mercurochrome "requires assistance on the part of the body economy" and that, if it "does not destroy or retard the growth and activity of the dominating infecting organism, it stirs up a resistance or a reaction which in turn destroys the bacteria." Obviously, parenteral alterative action plays a rôle in the results.

6. *When Speed is Essential.*—When medicaments cannot be introduced with sufficient rapidity by other channels, intravenous injection offers a most important, at times life-saving, avenue into the system. To save us from applying this principle in too broadcast a manner, it is necessary to bear in mind its essential limitations. It is most unlikely that we can increase to an important extent the concentration in the blood of

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[143] Ulrich, H. L., and Rypins, Harold: J. Pharmacol. & Exper. Therap. **19:** 215 (April) 1922.

[144] Straube, W.: Munchen. med. Wchnschr. **58:** 93 (June 27) 1911.

[145] Friedman, M.: Deutsch. Ztschr. f. Chir., 1919, p. 352.

[146] Seelig, M. G.: Localized Gangrene Following the Hypodermic Administration of Calcium Chloride, J. A. M. A. **84:** 1413 (May 9) 1925.

[147] Fleisher, M. S., and Loeb, Leo: J. Exper. Med. **11:** 642, 1909.

[148] Neumann, W.: München. med. Wchnschr. **67:** 762 (Nov. 5) 1920.

[149] Maendl, H.: Ztschr. f. Tuberk. **35:** 184 (Nov.) 1921.

[150] Pellé, A.: Bull. et mém. Soc. méd. d. hôp. de Paris **46:** 1346 (Oct. 20) 1922.

[151] Merklen, P., and Dubois-Roquebert: Bull. et mém. Soc. méd. d. hôp. de Paris **46:** 349 (Feb. 24) 1922.

[152] Rist, Ameuille and Ravina: Bull. et mém. Soc. méd. d. hôp. de Paris **45:** 1016 (July 1) 1921. Beasley, T. J.: Indianapolis M. J., January, 1915; Calcium Chloride in Intestinal Tuberculosis, J. A. M. A. **73:** 550 (Aug. 16) 1919. Ringer, P. H., and Minor, C. L.: Am. Rev. Tuberc. **5:** 876 (Jan.) 1922.

[153] Pellé, A.: Bull. et mém. Soc. méd. d. hôp. de Paris **46:** 264 (Feb. 10) 1922.

[154] Singer, Gustav: Therap. Halbmonatsh. **24,** Dec. 15, 1921.

[155] Loewi, O.: München. med. Wchnschr., 1917, p. 31.

[156] Young, H. H.: The Treatment of Infections, General, Local and Urinary, with the Intravenous Injection of Mercurochrome, Surg. Gynec. Obst. **40:** 97 (Jan.) 1925.

diffusible and absorbable bodies, such as the iodides, arsenic, the salicylates or quinine,[157] when we give these intravenously, than when we administer them perorally, provided the stomach is retentive. When, however, vomiting or purging renders the primae viae unavailable, or circulatory collapse makes sufficiently rapid absorption doubtful, intravenous administration may have to be resorted to. Thus, in the case of the salicylates, relief of rheumatism can practically always be satisfactorily obtained by giving the medicine perorally; but, should a patient suffering from this disease be unable to obtain the benefit of salicylization by the oral route, as when the stomach is absolutely intolerant of it, intravenous administration is decidedly indicated. Mendel[158] offers the following formula for this purpose:

℞ Sodium salicylate	8.0 Gm.
Caffeine sodium salicylate	2.5 Gm.
Sterilized water	to make 50.0 cc.

Inject 2 Gm. (one fourth of this solution) every twelve hours.

In the pernicious form of malaria, quinine should be administered intravenously, though it must not be relied on to exterminate the parasites from the patient's system and must be supplemented by a peroral course of quinine. Strong solutions, from 5 to 10 per cent, of the dihydrochloride or the hydrobromide in physiologic sodium chloride solution (0.6 per cent) may be given in quantities of 5 cc., provided they are administered slowly enough; for such injections may be followed by disappearance of the pulse for a few seconds and alarming lowering of blood pressure. The more dilute the solution and the slower the injection, the safer. Brahmachari[159] advocates infusion of 1:300 solution in physiologic sodium chloride solution given at a rate of 10 cc. per minute. Thus, the administration of 0.65 Gm. woud require 200 cc. of solution. If collapse should occur during quinine infusion, epinephrine or pituitary, and possibly tight bandaging of the extremities, may be of service.

Specific antiserums may have to be given intravenously, either because of the presence of a malignant form of the disease, as in laryngeal diphtheria, or because the antiserum is too feeble in its action when given by other channels, as pneumonia or streptococcus antiserum. Though antimeningococcus serum is best given by subthecal injection, combination of this with vein infusion seems to improve the results. In the treatment of tetanus, the antiserum should be administered intravenously as well as subthecally.

Intravenous administration may be demanded by so great an enfeeblement of the circulation that absorption might not occur readily enough, even when the drug is given hypodermically or intramuscularly. It is, for instance, in such conditions that the using of digitalis bodies, as strophanthin, intravenously may be life-saving.

7. To Avoid Ill Effects of Other Forms of Injection.—Destructive or irritant action of the medicament may indicate intravenous administration, as in case of arsphenamine or neo-arsphenamine. It is a curious fact, explained by immediate dilution with the blood stream, that many substances which give rise to pain and local injury when injected subcutaneously or intramuscularly may be introduced intravenously without such ill effects. For the same reason, antimony and potassium tartrate, which seems to be a specific remedy in leishmaniasis and bilharziasis, must be given intravenously. In the emergencies of acidosis, when alkali cannot be given by mouth or absorbed rapidly enough from rectal administration, vein infusion of 3 per cent sodium bicarbonate solution is indicated, as alkali is liable to produce necrosis on subcutaneous injection.

(To be continued)

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[157] Osborne, E. D.: Contributions to the Pharmacology and Therapeutics of Iodides, J. A. M. A. **79**:615 (Aug. 17) 1922.

[158] Mendel: Sem. Méd., April 20, 1904.

[159] Brahmachari, U. N.: Calcutta M. J., February, 1924.

New and Nonofficial Remedies

John Howland—An Appreciation

The following has been unanimously adopted by the members of the Council on Pharmacy and Chemistry.

W. A. PUCKNER, Secretary.

By the death of John Howland, the Council on Pharmacy and Chemistry of the American Medical Association has sustained a great loss; for he was a member whose devoted services were much valued and whose contributions to the scientific progress of medicine have been outstanding. In the deliberations of the Council he was careful to give heed to the interests of all concerned, but constantly with the thorght that the needs of little children were primary. He read widely; and when he spoke, he did so with a knowledge of the facts. His opinion was forcefully presented, and directed to the main point, discarding unessential considerations and observations. His life was broad, covering, first, the care of the sick; secondly, investigations into the body processes, particularly as they were related to the feeding of the child; thirdly, the teaching of his specialty to young men whom he inspired with the highest ideals. The members of the Council on Pharmacy and Chemistry of the American Medical Association mourn the loss of their colleague, and point to his services as an inspiration for all.

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

IVYOL.—Poison Ivy Extract-Mulford.—A solution in olive oil of an irritant or vesicant oil extracted from the fresh leaves of poison ivy (*Rhus toxicodendron*).

Actions and Uses.—Ivyol is used to relieve the symptoms of the dermatitis produced through contact with poison ivy.

Dosage.—In cases of average susceptibility, 0.7 cc. at daily intervals for four doses or until relieved. In cases of unusual susceptibility, from 0.2 to 0.35 cc., increased or not as indicated.

Manufactured by H. K. Mulford Company, Philadelphia. U. S. patent 1,559,340 (Oct. 27, 1925; expires, 1942). U. S. trademark applied for.

Hypo Units Ivyol: Collapsible syringe containers, each containing 0.7 cc. of ivyol.

The fresh leaves of *Rhus toxicodendron* are extracted with purified petroleum benzin. The resulting extract is filtered through paper and decolorized by agitation with fullers' earth. The decolorized extract is concentrated in vacuo to one-tenth its original volume; the concentrated extract is allowed to evaporate spontaneously to dryness; and the residue dissolved in sterile olive oil in the proportion of one part of the extract to 1,000 parts of oil, and 0.2 per cent camphor added as a preservative.

PITUITARY EXTRACT-LEDERLE 20 UNITS.—A slightly acid aqueous solution containing the water-soluble principle or principles of the fresh posterior lobe of the pituitary body of cattle, free from preservative. It is standardized by the method of the U. S. Pharmacopeia to have twice the strength of solution of pituitary-U. S. P. X.

Actions and Uses.—See Pituitary Gland, New and Nonofficial Remedies, 1926, p. 281.

Dosage.—See Solution of Pituitary, New and Nonofficial Remedies, 1926, p. 283.

Manufactured by the Lederle Antitoxin Laboratories, New York. No U. S. patent or trademark.

Ampules Pituitary Extract-Lederle, 20 Units, 1 cc.

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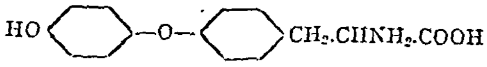
SATURDAY, AUGUST 14, 1926

THE CONSTITUTION OF THYROXIN

Iodine was discovered as a normal component of the thyroid gland by Baumann in 1895. It was not long before the physiologic function of this structure was properly conceived to depend on its iodine-bearing components; and they were also held responsible for pharmacologic effects that various preparations of the glands could induce. Compounds isolated from the gland but not containing iodine have not been shown to have a physiologic activity similar to that of desiccated thyroid. In 1919, Kendall[1] of the Mayo Foundation announced, as the result of a long and painstaking investigation, the successful isolation from the thyroid gland of a crystalline substance containing 65 per cent of iodine, which he named "thyroxin," and which has been proved by numerous clinical investigations[2] to be the substance, or at least one of the most important substances, through which the thyroid gland controls the metabolic rate. Kendall's achievement has been accorded widespread recognition.

The possibility of employing thyroxin itself instead of the desiccated glands or other crude products has marked a decided therapeutic advance. Dosage could be made more accurate; intravenous use became feasible whenever this procedure seemed likely to be an advantage to the patient. As in the case of the somewhat analogous hormone epinephrine, the next step to be desired was the synthetic production of the potent substance. This has not yet been accomplished; but the possibility seems measurably nearer than it did a few months ago. Kendall believed the empiric formula of thyroxin to be $C_{11}H_{10}O_3NI_3$ and assumed its structural formula to be that of *3,5,6*-trihydro-*4,5,6*-tri-iodo-*2*-oxy-*3*-indolpropionic acid.[3] This conclusion has lately been challenged by Harington[4] of the Department of Pathological Chemistry, University College Hospital Medical School, London. The British biochemist, benefiting by the pioneer labors of Kendall, has succeeded in greatly improving the method of isolation. Kendall had secured 33 Gm. of thyroxin from three tons of the fresh glands—a yield of about 0.001 per cent. It is now possible to increase the yield to as much as 0.027 per cent, or about 0.12 per cent of the fresh gland.

The renewed study of the product thus rendered more readily available has led Harington to the conclusion that the correct empiric formula of thyroxin is $C_{15}H_{11}O_4NI_4$. On this basis the earlier assumptions of its chemical structure are no longer tenable. Through a remarkably incisive investigation, Harington has made it highly probable that thyroxin is a tetraiodo-substituted derivative of the *p*-hydroxyphenyl ether of tyrosin:



p-hydroxyphenyl ether of tyrosin.

The orientation of the iodine atoms in thyroxin remains to be finally determined, but experiments, which are as yet incomplete, indicate that the iodine atoms probably occupy the 3, 5, 3′, 5′ positions. This is the record of another great achievement in chemistry related to medicine. The day of making synthetic thyroxin on a practical scale can no longer be far away.

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[1] Kendall, E. C.: Isolation of the Iodine Compound Which Occurs in the Thyroid, J. Biol. Chem. **39:** 125 (Aug.) 1919.

[2] Boothby, W. M., and Sandiford, Irene: Physiol. Rev. **4:** 69 (Jan.) 1924.

[3] Kendall, E. C.: Glandular Therapy, Chicago, American Medical Association, 1925, p. 17.

[4] Harington, C. R.: Chemistry of Thyroxin, I, Isolation of Thyroxin from the Thyroid Gland, Biochem. J. **20:** 293, 1926.

THE ORIGIN AND FATE OF UROBILIN

Last year, Wallace and Diamond[1] of the New York University Medical College advocated the use of the urobilinogen test as a routine laboratory measure in all urine examinations. They believe that in icterus or latent icterus, in hepatic disorders, in the anemias, in malaria, in infections, in malignant disease and in intoxications, it will supply an important adjuvant in the routine diagnosis, and will often aid in clearing up intricate and obscure clinical conditions. It is argued that the alleged constant presence of urobilogen in catarrhal jaundice, and its total absence in mechanical icterus, such as is encountered in carcinoma of the head of the pancreas and of the biliary tract, forms a distinguishing diagnostic feature between this benign form of jaundice and those due to malignant causes. It has already been pointed out in The Journal,[2] particularly on the basis of the researches of a group of workers[3] at the Mayo Clinic, that there are definite limitations to the use of functional tests in the study of hepatic disturbances. In any event, the scientific background or basis for the proposed use of any supposedly specific reaction deserves to be clearly understood.

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[1] Wallace, G. B., and Diamond, J. S.: The Significance of Urobilinogen in the Urine as a Test for Liver Function, Arch. Int. Med. **35:** 698 (June) 1925.

[2] Liver Injury from Biliary Stasis, editorial, J. A. M. A. **87:** 415 (Aug. 7) 1926.

[3] Greene, C. H.; Snell, A. M., and Walters, Waltman: Diseases of the Liver, I, A Survey of Tests for Hepatic Function, Arch. Int. Med. **36:** 248 (Aug.) 1925. Snell, A. M.; Greene, C. H., and Rowntree, L. G.: Diseases of the Liver, II, A Comparative Study of Certain Tests for Hepatic Function in Experimental Obstructive Jaundice, ibid, p. 273. Greene, C. H.; McVicar, C. S.; Rowntree, L. G., and Walters, Waltman: Diseases of the Liver, III, A Comparative Study of Certain Tests for Hepatic Function in Patients with Obstructive Jaundice, ibid. **36:** 418 (Sept.) 1925. Greene, C. H.; McVicar, C. S.; Walters, Waltman; and Rowntree, L. G. Diseases of the Liver, IV, Functional Tests in Cases of Carcinoma of the Liver and Biliary Tract, ibid. **36:** 542 (Oct.) 1925.

Wallace and Diamond urge that the usefulness of the urobilogen test, as an evidence of liver disturbance and as an aid in the clinical differentiation between various types of icterus, depends entirely on the enterogenous origin of urobilogen. The belief that urobilogen may be formed in the kidney, through a reduction occurring in that organ, appears to have been definitely disproved. Most investigators are agreed that urobilin or urobilinogen is formed in the intestine by a bacterial reduction of the bilirubin that enters it. Only certain micro-organisms are capable of effecting this change. A few students of the subject have maintained, on the contrary, that there may be an hepatic origin also for urobilin; they assume that injury to the liver cells brings about a perversion of pigment metabolism, in consequence of which urobilin is formed. The experiments of McMaster and Elman[4] at the Rockefeller Institute for Medical Research have demonstrated clearly that complete bile deprivation, by intubation of the common duct with collection of the total bile in such a way as to maintain sterility, is followed by the total disappearance of urobilin from the excreta, not only in the normal animal but even after the liver is injured, the bile ducts occluded, or blood destroyed. These observations are not in accord with the experiments of many previous workers, but the latter have employed the open bile fistula methods and dealt necessarily with infected biliary tracts.

Normally the urobilin, formed in the intestine by the bacterial reduction of bilirubin, is absorbed and removed from the blood of the liver. When this organ has been injured the pigment appears in the urine, owing to failure of the hepatic tissue to prevent the passage of urobilin into the general circulation. The latest studies at the Rockefeller Institute[5] explain some of the apparent exceptions to the enterogenic origin of urobilin by the demonstration that infection of a previously sterile biliary tract with fecal bacteria leads to the formation of urobilin from the bilirubin of the bile as it flows through the ducts. No bilirubinuria occurs, however, unless temporary biliary obstruction is produced, or the liver parenchyma injured. Then urobilinuria develops, despite the fact that no bile is reaching the intestine and, by corollary, no urobilin being formed there. There are indications of a possible active absorption of urobilin from the normal gallbladder; and there can be no doubt, we are told, that the pigment is absorbed from within the bile ducts. In the eyes of McMaster and Elman, however, there is no evidence that urobilin is ever formed through the action of liver parenchyma. The upshot of these experiments, which seem to harmonize all assumed conflicts of view, is that urobilin appears only when the bilirubin of the bile is subjected to *reduction by certain bacteria.* Normally, this takes place in the intestine; but it may also occur in a biliary tract contaminated with the appropriate organisms. Urobilin in the urine depends, according to McMaster and Elman, first, on the absorption of the substance from these situations, and, secondly, on the failure of the liver to remove the pigment from the blood.

ADJUSTMENT OF THE BODY TO HEMORRHAGE

The response of the body to extensive hemorrhage is an indication of the protective mechanisms that are at its disposal and the way in which they may be adapted to its use in such emergencies. Loss of blood is not to be identified simply with depletion of fluid; otherwise it could be readily replaced by ingestion of water. The plasma and cells of the blood have special chemical components that characterize them. It has been stated recently that the inorganic composition of plasma differs so widely from that of corpuscles that analyses of whole blood without reference to cell composition and the relative proportion of cells and serum are of little significance.

After severe hemorrhage, as Kerr[1] has pointed out, the organism employs every possible means to secure normal nutrition of the tissues by restoring blood volume. The dependence of a normal blood flow on the restoration of blood volume has been shown by Gesell, Capp and Foote.[2] That the inflow of tissue fluids is an important factor in restoring blood volume after hemorrhage has long been recognized. In an investigation of the changes that take place in the chemical composition of the blood after hemorrhage, it becomes necessary therefore to learn something of the nature of the tissue fluids, for they are at the disposal of the depleted blood. Furthermore, Kerr adds, among the factors concerned in the control of the normal composition and volume of the plasma may be mentioned the activity of the kidney in governing to a great extent plasma volume as well as its content of salts. Other factors of great importance are the permeability of the capillaries, and the passage of fluids and ions through their walls. Changes in blood pressure, in osmotic pressure and in the protein concentration of the plasma and lymph may influence these factors in various ways. It is further pointed out that if lymph, intracellular fluids and fluid absorbed from the gastro-intestinal tract differ appreciably from one another and from plasma in composition, it should be possible by investigating what changes occur in the blood after hemorrhage to determine the nature of the diluting fluids and their origin.

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[4] McMaster, P. D., and Elman, R.: Studies on Urobilin Physiology and Pathology, J. Exper. Med. **41**: 503, 513 (April), 719 (June); **42**: 99 (July), 619 (Nov.) 1925.

[5] McMaster, P. D., and Elman, R.: Studies on Urobilin Physiology and Pathology, VI, The Relation of Biliary Infections to the Genesis and Excretion of Urobilin, J. Exper. Med. **43**: 753 (June) 1926.

[1] Kerr, S. E.: Studies on the Inorganic Composition of Blood, I, The Effect of Hemorrhage on the Inorganic Composition of Serum and Corpuscles, J. Biol. Chem. **67**: 689 (March) 1926.

[2] Gesell, R.; Capp, C. S., and Foote, F.: Am. J. Physiol. **63**: 1 (Dec.) 1922.

The cells of the body are characterized by a comparative richness in potassium; in the fluids, on the other hand, sodium is relatively more abundant. Hence, as Kerr argues, if the restoration of blood volume is accomplished only by absorption of water from the gastro-intestinal tract, there should result a decrease in all the inorganic components and protein of the serum, assuming that this liquid would have a low salt content. Dilution by lymph only should result in a decrease in serum potassium and possibly protein. Intracellular fluid only should produce a decrease in sodium and chloride, and an increased concentration of potassium and magnesium. It is obvious that both lymph and fluid from the gastro-intestinal tract aid in restoring blood volume, and the question is merely whether intracellular fluids are actually drawn on. Kerr's investigation showed that repeated severe hemorrhage produces a greater fall of sodium and chloride of serum, and an increase in the inorganic phosphate. No changes in the potassium, calcium or magnesium of serum were observed. A large increase in the potassium concentration of the corpuscles occurred. One cannot well avoid the conclusion, therefore, that there is a restorative inflow of intracellular fluids into the blood stream when the organism labors under the stress of a severe loss of its circulating medium. This information ought to point the way to more effective methods of treatment.

Current Comment

MEDICAL SERVICE IN THE WEST INDIES

In the Windward Islands Medical Service, involving Grenada, St. Lucia and St. Vincent, salaries vary for medical officers from 315 to 420 British pounds, with living expenses in certain cases. There are twenty-five such medical appointments. The medical officers have been dissatisfied, owing to the total inadequacy of the pay and the imposition of a fee table officially prescribed for private work; the absence of any recognized system of promotion or opportunities for leave or study, and the imposition of additional duties without additional compensation. A special officer from England visited the West Indies and made specific recommendations for improvement of the service to some extent. The governor of the islands, however, appointed his own committee to draw up a report and refused to acquiesce to the original proposal. A committee of the British Medical Association, considering the entire matter, recommended strongly that British physicians do not accept these appointments until the rights of the physicians in these cases are properly recognized. The report of that committee was approved, June 30, 1923, since which time the islands have had difficulty in securing qualified medical officers. Dr. Alfred Cox, secretary of the British Medical Association, writes that the governor has put into effect an ordinance which enables the local administration to employ physicians not qualified in the United Kingdom. This has been done with a view to securing recruits from the United States and from Canada. Dr. Cox writes further:

> It is true that we have seriously impeded the supply of recruits from this country, and that generally speaking means that a colonial administration begins to give considerable weight to our representations. This is not the case, however, where some other source of supply can be tapped, and it would seem that the Windward Islands under the medical ordinance I have mentioned have been able to carry on their medical service after a fashion satisfactory to the local administration without our help. Now, it seems to me pretty clear that if a medical post is not fit for a decently qualified practitioner from this country it can hardly be fit for a similarly qualified member of the American Medical Association, and if you have any means of drawing the attention of the profession in the States to this matter you would be doing a service not only to us but to your own members and to the members of the public in the Windward Islands.

GRADUATE MEDICAL WORK IN NEW YORK

In a pamphlet recently received, the opportunities for clinical study in postgraduate schools and hospitals of New York City have been set forth in elaborate detail. This pamphlet, prepared and issued by the Committee on Medical Education of the New York Academy of Medicine, shows which of the eighty-six hospitals in greater New York have general internships, those which have residencies in the specialties, and those which hold special clinics. Through this leaflet a physician can easily ascertain where to get such advanced medical instruction as he may desire. The map guides inserted in the pamphlet also will enable him readily to find any hospital in either New York or Brooklyn. In no other city in this country have the facilities for graduate instruction been so well organized, or the hospitals and clinics so carefully catalogued. The larger cities of this country, with their many well conducted hospitals and dispensaries, provide a great abundance of excellent clinical material which, if properly organized either through some such central committee or through university graduate medical schools, could be utilized in the higher education and training of physicians. Such organization for graduate medical instruction now constitutes one of the greatest needs in medical education in this country.

INFANT MORTALITY FOR 1925

The report of infant mortality for 1925 published by the American Child Health Association is compiled from figures applying to 632 of the 641 cities in the birth registration area, and from records of sixty-five of the seventy-five cities in the death registration area only. The infant mortality rate is the number of deaths under one year of age per thousand births, exclusive of stillbirths. In 1924 the infant mortality rate for cities in the birth registration area was 72.2, the lowest on record; for 1925, the figure was 72.6. Stonington, Conn., and Winona. Minn., presented the lowest village.

infant mortality on record, with rates of 32. In 1920 these two communities had populations less than 25,000. New York, where the infant mortality was 64, had the lowest rate among the ten largest cities of the country. Although this is double the proportion of deaths found in the small communities of Stonington and Winona, as a group the larger cities have lower rates than those of small size. For more than four years, Seattle has maintained the lowest rate for cities in the birth registration area, which in 1920 had a population of at least 250,000. The infant mortality in Seattle in 1925 was 45. In the death registration area, the lowest infant mortality rate, 57, was attained by Boise City, Idaho. These are crude rates, to be sure, and crude rates are somewhat unjust, since they do not take into account such influences as economic status, climate, race and nativity stock. In Southern cities, for instance, infant mortality rates are greatly increased by the relatively large number of infant deaths among the negroes. Within individual communities, nevertheless, the trend of the infant mortality rate is a valuable index of the efficacy of local measures. Corrected rates, with their wider significance, will be available as soon as all communities secure reasonably accurate registration of births and deaths. With this in view, the American Child Health Association "strongly supports the government's efforts to have the entire country within the birth registration area by 1930, for it feels that a complete record of births and deaths is essential for the carrying out of an effective child health program."

CREMATION

As the population for a country grows larger and an increasing proportion of it migrates to the cities, disposal of the dead becomes a problem. Even now, in some communities, the economic loss from maintaining inviolable cemeteries is tremendous. The esthetic aspect, furthermore, has considerable weight, as burying grounds may be unsightly; and they injure real estate values. The practical alternative to earth burial is cremation. In the United States, although thinking people have long favored the method, cremation has not been widely adopted. Greater progress has been made in other places. Zurich, in Switzerland, for instance,[1] allows interment in a suitable place but does not provide facilities for it. On the other hand, every facility for cremation is provided. A Japanese[2] has recently developed a smokeless and odorless crematory in which combustion is rapid and which requires little fuel. In England, also, cremation is gaining favor. The number of cremations in Great Britain has increased from 445 in 1901 to 2,701 in 1925.[3] This progress, however, was not effected until the Cremation Society of England spent much effort on education of people in the idea. During this process of education, it was discovered that the public shunned the subject of what happens to the body after death. They were willing, however, to discuss the esthetic and sentimental aspects of the question. Beautiful gardens in which ashes might be dispersed appealed to them as a fitting, living memorial to the dead, much more appropriate than the traditional cemetery.

Association News

THE WASHINGTON SESSION

Hotel Reservations

Communications concerning hotel reservations for the Washington Session should be addressed to the chairman of the Committee on Hotels, Dr. John A. Talbot, New Willard Hotel, Washington, D. C.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. Francis Marion Inge, Mobile, has been elected president of the Association of Surgeons of the Southern Railway System.——Dr. John H. Owens, Ashland, has been appointed resident physician at Flat Top prison, to succeed Dr. J. E. Robbins, resigned.——Dr. John M. Hankins, East Lake, has been appointed assistant city physician for Birmingham.

Venereal Disease Clinic in Mobile.—The city, county and state contribute funds to operate a venereal disease clinic at the City Hospital, Mobile, where treatment is offered all persons who are unable to provide it themselves; in the annual report of the board of commissioners of the city of Mobile, it appears that 3,466 persons were treated at this clinic in 1925, 2,516 of whom were negroes. There were administered 10,391 arsphenamine treatments, 2,569 of which were to white persons. The total number of individual treatments given at the venereal disease clinic last year was 25,865.

CALIFORNIA

Society News.—Dr. Alfranio do Amaral, São Paulo, Brazil, addressed a special meeting of the San Diego County Medical Society, July 6, concerning the production and use of antivenin for snake bites.

Golf Tournaments.—The Southern California Medical Golf Association will hold its next tournament, August 19, at the Rancho Club; prizes will be given for handicaps; play starts at noon; initiation fee and dues are $3. The last tournament held at the Virginia Country Club was attended by sixty-six members. Arrangements are being made for a tournament at Del Monte, October 8-9, with the golfers from the northern part of the state. A special car on the Southern Pacific will be run to Del Monte for the members, which will leave there Sunday night, October 10, and arrive at Los Angeles, Monday morning at 8 a. m. The round trip fare is $18.50; berth, $4. Dr. Charles H. Weaver, Los Angeles, is the secretary of the Southern Medical Golf Association.

COLORADO

Report of Tuberculosis Foundation.—The annual report of the Colorado Foundation for Research in Tuberculosis, issued July 1, states that about $15,000 has been contributed to maintenance, and about $70,000 toward endowment. The immediate objective is a fund of $200,000, which will enable the research work to go forward on an income basis. The foundation's laboratory was moved to larger quarters in the basement of Palmer Hall, Colorado College, where there is access to all of the equipment in the physical and chemical departments of the college, and an opportunity to consult with professors of the various departments. The annual report gives a list of fifteen papers published by members of the foundation since its founding in May, 1924, a list of fourteen other papers of studies in progress or accepted for publication, and a list of contributors to the foundation. Dr. Gerald B. Webb is the research director; Dr. Charles H. Boisservain and a group of investigators conduct the work.

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[1] Bramley, Edward: Gardens of Rest, Cremation or Earth Burial, Sheffield Daily Telegraph, Jan. 26, 1926.

[2] An Improved Crematory, Japan Letter, J. A. M. A. 86: 1146 (April 10) 1926.

[3] Report of Council of Cremation Society of England for 1925, published by order of the council, 52 New Canadish Street, London, W. I.

DELAWARE

Diphtheria Prevention.—The state board of health recently began a campaign of immunization against diphtheria in the Laurel, Georgetown, Seaford and Milford special school districts, and in the Booker T. Washington School, Stockley Colony, and the Clayton Industrial School. Representatives of the state board met with the Sussex County Medical Society and agreed that the board should obtain the consent of parents, conduct the propaganda, furnish equipment and material, and do the Schick test, and that the physicians of each community were to give the toxin-antitoxin, for which a small fee was to be paid by the parents. From May 3 until May 28, Schick tests were made on 1,252 children, and 935 received toxin-antitoxin; about 94 per cent of the children tested were found susceptible to diphtheria; hearty cooperation, for which the state board expresses its appreciation, was received from all concerned.

DISTRICT OF COLUMBIA

Society News.—Dr. Grover Bache Gill has been elected president of the Maryland, Virginia and District of Columbia Medical Association; Dr. John E. Knight, Catlett, Va., vice president, and Drs. William Davis and Joseph D. Rogers, both of Washington, secretaries.

Personal.—Rear-Admiral Cary T. Grayson, U. S. Navy, retired, received the honorary degree of doctor of laws from the College of William and Mary at the recent commencement. ——Dr. Thomas A. Groover, Washington, recently received the honorary degree of doctor of science from George Washington University.——Dr. Rowland H. Ford resigned as assistant health officer, effective, August 12.

Names of Patients with Venereal Disease.—The executive committee of the Medical Society of the District of Columbia, the district health officer, the acting council of the medical society, Mr. Levi Cooke, and Representative Ralph Gilbert, held a conference recently about the law on venereal disease. Representative Gilbert, the author of this legislation, explained the law. The health officer then stated that hereafter the names of such persons would not be required to be reported except in case of those who failed or refused to follow the instructions issued to them by their physicians. It was agreed that the provisions of the law must be fully complied with in all other respects. The health officer requests the cooperation of the physicians in carrying out the law, and suggests that, in reporting cases of venereal disease, the number of the case as shown on the physician's office record be used instead of the name of the patient as heretofore required.

FLORIDA

Hospital News.—The Hollywood Company has offered $300,000 and a six acre site, it is reported, for a Southern Methodist Hospital.

Florida Physicians and Prohibition Laws.—In response to a request for the names of physicians whose liquor licenses have been revoked, the district prohibition administrator writes that the Florida law precludes the issuing of permits to physicians to prescribe intoxicating liquor in its natural state. The only permits used by physicians in Florida are those authorizing the use of alcohol for compounding medicinal prescriptions, and no revocation proceedings have been instituted against any physician in the state holding such a permit since the present executive personnel has been in charge of the district prohibition office.

ILLINOIS

Physician Fined for Violating State Prohibition Law.—Dr. Ben Russell of Buda plead guilty, July 30, to violation of the state prohibition law, it is reported, and was fined $400 and costs.

Liquor Licenses Revoked.—The district prohibition administrator with headquarters in Chicago announced, August 9, it is reported, the revocation of the liquor license of Dr. Albert Willis, Decatur.——The liquor license of the "New Home Sanitarium," Jacksonville, was also reported revoked.

Another Basket Picnic.—The Lee and Ogle Counties Medical Societies held their annual joint picnic at Lowell Park, Dixon, July 29; Dr. Philip H. Kreuscher, clinical professor of orthopedic surgery, Loyola University School of Medicine, Chicago, gave an address on "Backache"; Dr. Channing W. Barrett of the University of Illinois College of Medicine, on "Treatment of Fibroids"; Dr. John E. Tuite, Rockford, "Classification of Goiters," and Dr. William B. Peck, Freeport, "Reminiscences."

State Dental Bureau Established.—After several years of work to improve the dental welfare service of the state, the Illinois State Dental Society has secured permission to place one of its members on the state board of health; his salary will be paid by the Illinois State Dental Society, the Chicago Dental Society, and from such other sources as care to contribute for the purpose. It is presumed that when the value of this service has been demonstrated, the state will assume the expense. The appointee is Harold L. Freidinger, D.D.S., and he assumed his new duties, August 1.

Dr. Pfeiffenberger Honored.—The Alton Medical Society gave a banquet, July 28, in honor of Dr. Mather Pfeiffenberger, who was recently elected president of the Illinois State Medical Society. Dr. Nina P. Merritt, president of the Alton Medical Society, was toastmaster, and the principal speaker was Rev. A. Schwitalla, St. Louis, whose subject was "Idealism in the Practice of Medicine." Among other guests were Lieut.-Col. Ernest G. Bingham, U. S. Army Medical Corps, Jefferson Barracks, Mo.; Dr. Howard W. Barker, commanding officer, U. S. Veterans' Bureau Hospital no. 92, and Dr. Amand Ravold, president of the St. Louis Medical Society.

Mental Hygiene Committee.—The Central Illinois Committee for Mental Hygiene was organized, July 13, at Springfield, to carry on mental hygiene activities throughout the central part of the state and assist the Illinois Society for Mental Hygiene in state-wide activities by means of conferences, lectures, clinics and other education work; to secure field psychiatrists, social workers and psychologists to cooperate with the state medical society and the state department of health to secure a place on their program for mental hygiene, and to have semi-annual conferences among the various cities represented in the central state territory. Dr. Frank P. Norbury was named honorary chairman, and twenty-five directors are to be appointed.

Chicago

Liquor Licenses Revoked.—The local prohibition administrator, Mr. E. C. Yellowley, announced, August 9, it is reported, the revocation of the liquor licenses of the following:

Dr. Alphonse L. Beardslee
Dr. Lindsay A. Beaton
Dr. Joseph D. Cain
Dr. William J. Hurley
Dr. Clarence C. Reed
Dr. Leo R. Roth
Dr. Oscar A. Strauss

Warning—Mr. Fox Wanted.—The department of justice desires to locate George A. Fox, alias George William Fox, alias William Fox, who is wanted for securing money on worthless checks, and for impersonating a United States officer. Reports received indicate that Fox has passed more than fifty worthless checks in Chicago and other places; his method is to call on a physician, with some of whose friends he claims to be acquainted, and to carry on a long conversation about medical events; finally he states that he has been touring with his family in the east and has insufficient funds to return to Milwaukee; thus he persuades his victim to cash a check ranging from $25 to $50. Fox is fluent, well versed in medical terms, and poses as a doctor; he is about 43 years old, 60 inches tall, slightly round-shouldered, thin (about 140 pounds), has a smooth face, sandy hair, and has a conspicuous scar on the left undersurface of his chin. Any one encountering this man should immediately notify the bureau of investigation, department of justice, Chicago, Telephone Harrison 5448, or the detective bureau of the Chicago Police Department.

IOWA

Personal.—Drs. Tiffany J. Williams, New Haven, Conn., Norman F. Miller of the University of Michigan Medical School, Ann Arbor, and Cleary N. Swanson, Detroit, have been appointed to the staff of the obstetrics department at the University of Iowa College of Medicine, Iowa City.

Upper Des Moines Medical Association.—The annual meeting of this society will be held at Terrace Park Casino, Milford, August 17-18, under the presidency of Dr. Henry A. Powers, Emmetsburg. The Sioux Valley Medical Association has accepted an invitation to attend this meeting and will hold its business session, August 18, after the afternoon session. Persons desiring tickets for the banquet at Templar Park ($1.25 per plate) should notify Dr. Hiram O. Green, Spencer, Iowa, on or before August 17. Among many speakers at the scientific sessions will be Dr. James F. Weir and Dr. Waltman Walters, Rochester, Minn., "Treatment of Infection of the Gallbladder and Common Duct"; Dr. Charles A. Elliott, Northwestern University Medical School, Chicago, "Diagnosis and Treatment of Hyperthyroidism"; Dr. Michael J. Kenefick, Algona, president elect, Iowa State Medical Society, "Osteomyelitis"; Dr. Frank A. Ely, Des Moines, "Neuropsychiatric Hints for General Practitioners"; Dr. Lee R. Woodward, Mason City, "Coronary Thrombosis"; Dr. Wilbur E. Post, Rush Medical College, Chicago, "Recent Progress in Nephritis"; Dr. Arthur Steindler, University of Iowa, "The Arthritic Knee." There will be a drive through the lake region, dancing, and public meetings addressed by Dr. William Jepson, president, Iowa State Board of Health, on "The Cancer Problem"; U. S. Congressman William Boies; Dr. Don M. Griswold, University of Iowa, and by Judge B. F. Butler, Sibley, on "The Relation Between the Medical Profession and the Juvenile Court."

KANSAS

Hospital News.—Dr. William G. Norman, Cherryvale, is remodeling a residence for use as a hospital, which will be opened to the public about September 1.

Personal.—Dr. Harold T. Morris, Topeka, has been appointed medical referee for Kansas of the Mutual Life Insurance Company of New York, to succeed Dr. Wilson K. Hobart, resigned.——Dr. Edward L. Saylor became the resident pathologist of Bell Memorial Hospital, July 1.——Dr. Michael J. Owens was recently elected president of the Kansas City Academy of Medicine.

Society News.—Dr. Robert D. Irland, Kansas City, Mo., addressed the Jackson County Medical Society, recently, on "Treatment of Carbuncles with Magnesium Sulphate."——The Golden Belt Medical Association was addressed, July 8, by Dr. Jabez N. Jackson, Kansas City, president-elect of the American Medical Association; by Dr. Benjamin F. Morgan, Clay Center, president of the state medical society, and by Dr. Francis M. McCallum, Kansas City, vice president of the Missouri State Medical Society.

LOUISIANA

Physicians Fined for Prescribing Liquor.—The following physicians were fined $100 each by Judge Foster in federal court, New Orleans, July 26, it is reported, for illegally prescribing liquor:

Dr. Alfred L. Adam
Dr. Otto Braun
Dr. Keith Kahn
Dr. Abraham Mattes
Dr. Edward McCarthy
Dr. Maurice S. Rosenthal

Cordial Relations.—The Orleans Parish Medical Society has accepted with a letter of thanks and appreciation the offer of the Board of Administrators of the Tulane Educational Fund to continue the existing cordial relations and assurance of good will whereby the medical society is extended the privilege of conducting its meetings and housing its library in the Hutchinson Memorial Building of Tulane University. A resolution adopted by the board and recently presented to the medical society states that the contemplated erection of a new building for the Tulane school of medicine will in no way affect the present relations other than to provide more modern and better facilities for continuing the work of the society; further, that it is the purpose of Tulane University to foster higher education, and, through its department of medicine, to cooperate with the organized medical profession in the advancement of medical science.

MARYLAND

Hospital Changes Name.—The Hebrew Hospital and Asylum, Baltimore, has changed its name to the Sinai Hospital of Baltimore; 33 per cent of the pay patients treated at the Hebrew Hospital were Christians, and 51 per cent of those treated in the wards and free dispensaries. When the new $2,000,000 Schmidt Memorial Building is occupied in September, the institution will have a capacity of 275 beds.

Child Health Conferences.—The bureau of child hygiene is conducting child health conferences this summer, in an attempt to examine as many as possible of the children who will enter school this fall. During June, nine conferences were held in seventeen of the twenty-three counties, and a total of 1,842 children were examined; of those examined, only one out of three had been vaccinated against smallpox; about one out of every five was underweight, and about one out of every three had "unhealthy tonsils or adenoids." A report of the examination is sent to the family physician, whom the parents are advised to consult if the child needs medical service. There will be about 16,000 children to reach school age in Maryland this year. These conferences will continue through the summer.

MASSACHUSETTS

Health at Lynn.—Telegraphic reports to the department of commerce from sixty-six cities with a total population of about 29,000,000 for the week ending July 31 indicates that the lowest mortality rate (4) was for Lynn, and that the mortality rate for the group of cities as a whole was 10.9. The mortality rate for Lynn for the corresponding week last year was 7.6, and for the group of cities, 10.5.

Plan to Assist Communities Without Physicians.—The board of registration in medicine began in April to file a card in its office for each medical graduate as he is licensed by the board, on which is stated his desire for a location, or where he probably will locate. A letter has been sent out to the chairman of all boards of health in the state advising them of this plan, and those which signify their desire for additional physicians in their community are sent the names and addresses of physicians recently licensed who desire locations.

Personal.—Dr. Henry I. Dorr, Winchester, was presented with a loving cup, recently, at a medical meeting of the Associated Anesthetists of the United States and Canada, in recognition of his services in the advancement of science and the teaching of anesthesia; Dr. Dorr, months ago, gave $30,000 toward the equipment of a laboratory for research in anesthesia at the Temple School of Dentistry, Philadelphia.——Dr. Arial W. George, Boston, recently received the honorary degree of doctor of science from Tufts College.——The administrative board of the School of Public Health, Harvard University, for the coming year includes the president of the university, Dr. Lowell, and Drs. David L. Edsall, Milton J. Rosenau, Ernest E. Tyzzer, Edwin B. Wilson, Hans Zinsser and William L. Moss.

Society News.—Dr. Charles E. Perry, Hartford, addressed the Hampshire District Medical Society, July 15, on "Pneumonokoniosis."——The officers of the district medical societies met with the president of the state medical society, June 29, at the Harvard Club, Boston, to consider the work of the state society for the coming year. Following a luncheon, the legislative plans were fully presented, covering raising the standards of medical education, opposition to special examining boards, compulsory vaccination in private schools, and the restrictive feature in the appointment of members of the board of registration in medicine.——The Plymouth District Medical Society celebrated its seventy-fifth anniversary, July 15, at Nantasket; addresses were given by Dr. James S. Stone, president, Massachusetts Medical Society; Dr. Enos H. Bigelow, Framingham, on "Progress in Medicine," and Dr. Nathaniel K. Noyes, Duxbury, "History of the Society from 1851 to the Present."——The Massachusetts Central Health Council held a series of group meetings, June 15, in Boston, following a luncheon at the Hotel Westminster. The council was organized six years ago to bring together agencies interested in health for a better understanding and concerted action; among the agencies represented at this meeting were the Massachusetts Tuberculosis League, the Massachusetts Association of Boards of Health, the Massachusetts Association of Directors of Public Health Nursing Organizations, the Dental Hygiene Council of Massachusetts, the Massachusetts Medical Society, the New England Heart Association, and the Massachusetts Society for Mental Hygiene.

MICHIGAN

Hospital News.—Big Rapids is conducting a campaign for $40,000 to erect a community hospital.——The contract has been let for a $500,000 addition to St. Mary's Hospital, Saginaw.

Society News.—Dr. Alexander W. Blain has been elected president of the Academy of Surgery of Detroit for the ensuing year.——The state medical society conducted postgraduate conferences at Escanaba, July 26, Marquette, July 28, Houghton, July 29, and Ironwood, July 30. Among the speakers were Dr. William H. Marshall, Flint, "Diagnosis of Chest Conditions"; Dr. John L. Garvey, Ann Arbor, "Essentials in a Neurologic Examination"; Dr. Max M. Peet, Ann Arbor, "Fractures of the Skull"; Dr. Roland S. Cron, Milwaukee, "Prenatal Care"; Dr. Elmer L. Eggleston, Battle Creek, "Gastric Ulcer."——Drs. Cameron, Bell, Jackson and Williams were hosts to the Alpena County Medical Society and the Chippewa County Medical Society at Long Lake Lodge, July 15; there was a golf tournament, a dinner, and papers by Dr. Festus C. Bandy, Sault Ste. Marie, on "Mental Diseases," and Dr. George A. Conrad, Sault Ste. Marie, on "Enlarged Prostate."——The Oakland County Bar Association was host recently to the Oakland County Medical Society at a dinner following a golf tournament in which thirty-seven lawyers and thirty physicians took part. The state medical journal says this was the first joint golf tournament of doctors and lawyers in Michigan.

MINNESOTA

New Medical Society.—At a meeting at the St. Paul Town and Country Club, June 11, the Minnesota Society of Internal Medicine was organized for the purpose of promoting good fellowship, cultivating a distinct type of special practice in medicine, and encouraging medical education of a high order and stimulating research. The first officers elected were Dr. Charles L. Greene, president; Dr. George D. Head, vice president, and Dr. Edwin L. Gardner, secretary-treasurer. The first scientific meeting will be in November at Rochester.

Personal.—Edward C. Kendall, Ph.D., sailed for Stockholm, Sweden, July 17, to read a paper on "Oxidative Catalysts" before the International Physiological Congress, which met, August 3.——Dr. Estes H. Hargis has been appointed first assistant in general surgery to Dr. William J. Mayo for the quarter beginning July 5, and Dr. Claude F. Dixon first assistant to Dr. Charles H. Mayo.——Dr. Claude B. Lewis, St. Cloud, has been elected secretary-treasurer of the Great Northern Railway Surgeons Association.——Dr. Alvah J. Stowe, Rush City, has retired from the practice of medicine on account of ill health.

County Society Meeting.—The scientific session of the forty-eighth annual meeting of the Wabasha County Medical Society was held, July 8, aboard the *North Star*, the yacht of Drs. Charles H. and William J. Mayo. Among the speakers were Dr. George M. Waldie, Wabasha, "Relation of the Sanatorium to the General Practitioner"; Drs. Winford P. Larson and Woodard L. Colby of the University of Minnesota, "Immunization and Serum Treatment of Scarlet Fever and Diphtheria," and Dr. David S. Fleischauer, Wabasha, "Some Phases of Medical Economics." There was a dinner at the Hotel Anderson given by the Wabasha physicians and wives, and, following the boat ride, a reception. At the business session, Dr. Joseph S. Collins, Wabasha, was elected president of the society; Dr. Laurence F. Sutton, Mazeppa, vice president, and Dr. William F. Wilson, Lake City, secretary-treasurer. Dr. Wilson is said to have served the society in that capacity for about thirty years.

MISSISSIPPI

Society News.—Dr. Hugh A. Gamble, Greenville, recently addressed the North East Mississippi Medical Society, at Houston, on "Glucose Therapy by Vein"; the next meeting will be at Aberdeen in September.——The North Mississippi Six Counties Medical Society met at New Albany, July 21; Dr. Willis C. Campbell, Memphis, spoke on "Prevention of Deformities by the General Practitioner"; Dr. Seale Harris, Birmingham, Ala., on "Food in the Prevention of Diseases," and Dr. Peter W. Rowland, Oxford, on "Cardiac Stimulants."

"Eye Specialists" Swindle Aged Woman.—Two men, claiming to be eye specialists from New York, swindled Mrs. S. D. Leake, an aged and almost blind wife of a farmer near Laurel, out of $700, July 7, by a fake cataract operation. Pretending he could remove the cataract with radium, one of the swindlers put something that congealed in Mrs. Leake's eye, withdrew the coagulum and called it the cataract; the other swindler accompanied the husband to the bank to cash the $700 check; they escaped before the fraud was discovered, traveling in an Overland coupe; one is said to be tall and dark, the other tall and fair.

New Oyster Regulations.—The state board of health, cooperating with the U. S. Public Health Service, has promulgated regulations for handling oysters, effective September 1; they require, it is reported, that oyster plants must be equipped with steam under pressure or hot water for the sterilization of utensils; each employee must have a certificate of health from a physician; no oysters can be shucked in boats or skiffs, and if any are to be shipped out of the state, the floors of the packing plant must be of concrete; no oysters will be allowed on floors, and they must be on a bench at least 4 inches above the level where employees walk; buckets for receiving shucked oysters must also be raised above the floor.

NEW HAMPSHIRE

New Hampshire Surgical Club.—The annual meeting of the New Hampshire Surgical Club will be at Hanover, September 6, and, as usual, a week end outing will precede the meeting, comprising, among other things, a golf tournament and supper, September 5, at one of the outing club cabins. There will be a clinic at Mary Hitchcock Hospital in the forenoon, September 6, the presentation of papers and a business meeting in the afternoon, and a banquet in the evening, at which Dr. Elmer H. Carleton will be toastmaster.

NEW YORK

Hospital News.—The construction at Byram Woods, Harrison, of a $500,000 branch of St. Luke's Hospital, New York, was started July 26.——Ithaca General Hospital has just completed a twenty-two bed contagious ward at a cost of about $90,000.

Annual Registration of Physicians.—Any physician in New York who does not receive a registration blank before the first of October should communicate with the secretary of the board of medical examiners of the state department of education. Registration blanks will be mailed to all physicians before that date. These are for the period from Jan. 1, 1927, to Dec. 31, 1927.

Camp for Crippled Children.—The New York Rotary Club, dedicated August 1, what is said to be "the first camp in the world for the exclusive use of crippled children." Nine buildings have been constructed, all cabins except the mess hall, which cost $30,000. About 1,200 applications have already been received for a month at the camp. The Long Island Parkway Commission donated the site.

New York City

Collection and Sale of Mother's Milk.—The Children's Welfare Federation, consisting of 221 organizations interested in child welfare, conducts three units for the collection and sale of mother's milk. During 1925, there was collected from ninety-eight mothers 1,859 quarts and 29 ounces of milk, of which 366 quarts and 26 ounces was given away; the remainder was sold for from 20 to 30 cents an ounce. The mothers are paid 10 cents an ounce for the first 5 ounces and 15 cents for every ounce over 5. Milk is collected under the supervision of a matron and a registered nurse. The average mother has about 10 ounces of milk to sell each day, says the *Bulletin* of the Medical Society of the County of Kings, but some have supplied 30 and 40 ounces in addition to nursing their own babies. Orders are placed through the central office of the federation, 505 Pearl Street.

Physicians Indicted for "Prescription Bootlegging."—A federal grand jury indicated the following physicians, August 4, it is reported, for conspiracy to violate the National Prohibition Act. The evidence is said to have been collected over a period of several months by Assistant U. S. Attorneys John J. Fogarty and H. G. Hitchcock who examined and compared more than 500,000 prescriptions:

Dr. Frank J. Accarino
Dr. Alexander R. Alexander
Dr. Benjamin H. Archer
Dr. Samuel Ash
Dr. Emanuel Bailyn
Dr. Gustave Brown
Dr. Wilfred P. Byrne
Dr. Ignazio Cangialosi
Dr. Amedee J. Debon
Dr. Stella Shaffer Epstein
Dr. John Edgar Getman
Dr. Harold Goldstein
Dr. Wallace B. House
Dr. Morris A. Jacobs
Dr. Harold H. Johnson
Dr. Paul Kaufmann
Dr. Jose Lisandro Medina
Dr. Mathias Nachuni
Dr. Dominico Paccione
Dr. Harry Pike.
Dr. Morris Rubinstein
Dr. Percy Morton Rubenstein
Dr. Samuel Schechter
Dr. John E. Swartz
Dr. Lazar Wallerstein
Dr. William L. Weintraub
Dr. Abraham L. Wincor

The following druggists, among others, were reported to have been indicted:

George J. Blatman, 220 East Broadway
Samuel R. Hurwitz, 8th Ave. and 44th St.
Samuel Marcus, 126 West 43th St.
Charles Moss, 5 West 56th St.
Samuel Perlmutter, 9th Ave., cor 28th St.
Nathan Salob, 1500 Boston Road
Julius Jay Smith, 8th Ave. and 44th St.

OHIO

Illegal Practitioners Fined.—Charles H. Layzell, Marysville, and Martin Langbough, Richwood, were each fined $100 and costs recently, it is reported, on a charge of practicing medicine without a license. Both of these men are said to have been sent to the workhouse three years ago, when they refused to pay a fine for a similar offense.

Hospital News.—The Piqua Memorial Hospital will soon construct a $30,000 addition, to be known as the Patterson Memorial Wing.——Dr. Samuel B. McGuire, Dover, has been elected president of the medical staff of Union Hospital for the ensuing year.——The Cleveland City Hospital group is to construct a $100,000 addition to the children's tuberculosis preventorium.

Congress Pensions Yellow Fever Volunteer.—Clyde L. West, who volunteered to be bitten by mosquitoes infected with yellow fever at Camp Lazear, Cuba, in 1901, has been pensioned by Congress, the War Department announces, at the rate of $100 a month for the remainder of his life. West enlisted in the U. S. Army at Toledo in 1899, volunteered to be bitten in connection with the work of the Walter Reed Commission, was taken sick with yellow fever, Feb. 13, 1901, and was discharged from the service, July 10, 1902, at Fort Myer, Va. He has been employed as watchman in Washington by the office of Public Parks and Buildings.

Society News.—The Fayette County Medical Society recently entertained the Five County Medical Society—Clinton, Greene, Highland, Ross and Fayette—at a dinner attended by 118 physicians and their wives, Dr. Leora G. Bowers, Dayton, president, Ohio State Medical Association, and Dr. Ben R. McClellan, Xenia, past president of the Ohio State Medical Association, were among the speakers; Dr. Howard L. Stitt, Cincinnati, spoke on "Aspiration and Irrigation of the Bronchial Tubes."——The Darke County Medical Society held its June meeting at the Greenville water softening and purification plant, which they inspected; the chemist in charge gave a talk on the modern methods of purification and softening of water.——Dr. George W. Crile, Cleveland, addressed the Four County Medical Society—Williams, Defiance, Fulton and Henry—at Bryan, June 24.——Dr. Berman S. Dunham, Toledo, addressed the Putnam County Medical Society, Ottawa, July 1, on "Cisternal Puncture in Intracranial Birth Injuries."——The annual clinic of the Ashtabula County Medical Society was recently held at the Ashtabula General Hospital; Dr. Roy W. Scott, Cleveland, conducted the clinic for adults, and Dr. Henry J. Gerstenberger, Cleveland, the children's clinic.——The Tuscarawas County Medical Society held a joint meeting with the Tuscarawas County Bar Association at New Philadelphia, recently; topics of mutual interest to the two professions were discussed, Dr. James A. McCollam speaking for the medical society; a similar joint meeting was held last year.——The Muskingum County Academy of Medicine, Zanesville, refused to endorse the clinic for children of preschool age, being fostered by the state department of health and the Women's Federated Clubs, at its July meeting, chiefly, it is said, because such clinics encourage undeserved charity and tend toward state medicine. The academy, however, favors the continuance of the tuberculosis clinic which is being carried on under the auspices of the Federated Clubs.——Dr. Robert L. Lawwill, Seaman, addressed the Adams County Medical Society, recently, on "Puerperal Sepsis."

OREGON

Society News.—The Eastern Oregon Medical Society held its annual meeting at Hot Lake, August 4, following a trip to North Powder Lakes, where a "cowboy" breakfast was served, and addresses were made by Drs. Isaiah U. Temple, Pendleton, on "Tick Paralysis"; Dr. Leo B. Bouvy, La Grande, "Periodic Examinations from the Specialist's Standpoint"; Dr. Thomas J. Higgins, Baker, "Sidelights on Twenty Years of Practice," and Dr. Thomas E. Griffith, The Dalles, "Professional Ethics." There was a reception and dance in the evening, and a symposium by members of the state board of health.——The Douglas County Medical Society was organized at a meeting in Roseburg, July 14; Dr. Alvane C. Seely was elected president, and Dr. Richard F. Thompson, secretary.

PENNSYLVANIA

Pittsburgh's New Medical Center.—The new $6,000,000 Presbyterian Hospital, Pittsburgh, when completed will be the general hospital for the proposed new medical center of the University of Pittsburgh; present plans provide for a hospital of 600 beds, to be erected on the "knoll" now occupied by the Faculty Club. It has been announced that the Eye and Ear Hospital, 1945 Fifth Avenue, will join in the medical center and erect a $1,000,000 structure opposite the new children's hospital on the university's site. Plans are being considered for the affiliation of the Montefiore and another special hospital with the medical center.

Philadelphia

Personal.—Dr. Laurence Webster Fox, who has spent the last two summers among the American Indians in trachoma eradication work, is working this summer among the Crow Indians at Billings, Mont.; Dr. Fox held a clinic at Browning, Mont., August 10, which was attended by twenty-eight physicians of the Indian service.——Dr. Charles H. Frazier, professor of surgery, University of Pennsylvania School of Medicine, left for a five months' trip in China, where he will deliver an address before the "Chinese Medical Society" at Peking in September.

SOUTH CAROLINA

Personal.—Dr. William D. Ferguson has been reelected chairman of the board of health of Laurens.——D. James A. Hayne, state health officer, received the honorary degree of doctor of public health at the recent commencement of the Medical College of the State of South Carolina.

TENNESSEE

Society News.—Dr. Ralph H. Monger, Knoxville, gave an illustrated lecture before the Greene County Medical Society, July 12, at Greeneville, on "Affections of the Heart and the Kidney."

Typhoid Outbreak.—There had been thirty-two cases of typhoid reported in Nashville up to July 23, it is reported, as against only four cases reported in that city for June, and three deaths were reported in July; seventeen of these cases, the health officer said, were contracted outside of the city. In none of the thirty-two cases reported in July had the patients been vaccinated against typhoid.

VIRGINIA

Physician Sentenced for Narcotic Violation.—Dr. John W. Brown, Hampton, was sentenced, July 6, to four months in jail and fined $200 on each of five counts charging violation of the narcotic law, it is reported. The jail sentence will run concurrently.

Virginia Physicians and Prohibition Laws.—The district prohibition administrator at Roanoke, Mr. R. A. Fulwiler, in response to a request for the names of physicians whose liquor licenses have been revoked, writes in part as follows: "I beg to advise that we only have a very limited number of revocations in this state as our physicians are very high class citizens. We seldom have more than two or three a year."

GENERAL

Conference on Pharmaceutical Research.—The fifth annual meeting of the National Conference on Pharmaceutical Research will be held at the Hotel Bellevue-Stratford, Philadelphia, September 11. Reports will be received from delegates from the fourteen affiliated organizations as well as reports from the ten standing committees and from the special committees. The general discussions will be on: (1) census of research; (2) graduate students in pharmacy and their research work; (3) research topics; (4) research grants and prizes, and (5) research fellowships and scholarships.

Warning — Microscopes Renovated. — We have been informed that "Major Raymond de Cercy" has recently been working his old game in Minnesota of repairing microscopes and other medical equipment, and charging fancy prices for unnecessary work. He is said to be using order books and cards of the Cameron's Surgical Specialty Company as if he were still connected with that firm. He claims to be a German, while formerly he was said to be a French hero, a chevalier of the Legion of Honor, etc. His method appears to be to take a physician's microscope without giving an estimate of the cost of repairs, and returning the next day with a bill, which he justifies by stating that almost everything about the microscope had to be replaced. Major Raymond de Cercy was the subject of a similar item in the Utah *News*, in The Journal, Dec. 5, 1925, and in the Washington *News*, Jan. 2, 1926.

Recommendation Concerning S. Scabiei.—The secretary of the international commission on zoological nomenclature invites attention to the fact that application has been made to the commission to suspend the rules in the case of *Sarcoptes*, Latr., 1804, tsd. (Latr., 1810) *passerinus*, and to place *Sarcoptes*, 1804, in the official list of generic names with *S. scabiei* as type. The argument states that the application of the rules to this "transfer" case will result in greater confusion than uniformity, involving generic, subfamily and family names, and designation of diseases in human and comparative medicine. The suspension requested will result in validating internationally accepted (though erroneous) nomenclature in consistent use for more than a century in zoology, and in human and comparative medicine. The secretary is familiar with the premises and in his report to the commission, will state that he considers this a typical case in which suspension is justified. He will, however, delay announcement of final vote until about Oct. 1, 1927, in order to give ample opportunity to interested persons to express their views for or against the suspension.

Prize for Advancement of Science.—The fourth $1,000 prize of the American Association for the Advancement of Science will be awarded at the Philadelphia meeting. The council has decided that hereafter the annual prize will not be divided, the entire amount each year going to a single winner. There is available sufficient money for three more annual prizes from funds given by a member who wishes his name withheld. The prize is awarded to some one who presents at the annual meeting of the association and associated organizations a paper making a noteworthy contribution to science; he does not necessarily need be a member of the association; there is no formal competition; all papers on the program are considered. The award is decided by a special committee, which, for the Philadelphia meeting, comprises:

C. E. Seashore, chairman; dean of the Graduate College, University of Iowa.
Otis W. Caldwell, director of the Lincoln School, Teachers College, New York City.
Charles B. Davenport, director, Station for Experimental Evolution, Cold Spring Harbor, N. Y.
Lauder W. Jones, professor of chemistry, Princeton University.
C. F. Marbut, chief, Division of Soil Survey, Bureau of Soils, U. S. Department of Agriculture.

American Society for the Control of Cancer.—June *Campaign Notes* explains the organization of the American Society for the Control of Cancer as follows: it consists of four elements; the officers and executive committee, the staff, the field organization, and its members and supporters. The executive committee is elected at the annual meeting of the council, and its chairman is the president of the society; the staff comprises the managing director, a field representative and the half dozen clerical assistants. The field organization consists of a chairman for every state and every province in Canada, who are appointed by the managing director, usually for two or three years. The state chairmen appoint at time of exceptional activity local chairmen to cover more effectively their own territory, and all local chairmen appoint committees of not less than five nor more than twenty to assist in conducting the work, and these, when the period of intensive activity is over, automatically go out of existence, and the office of local chairman becomes vacant; money for local campaigns is paid by voluntary subscriptions in the territory where spent. A period of local activity may last a month or longer; two states have adopted a plan for an active period of three years. The staff of the central society assists in these local campaigns by preparing and sending out pamphlets, lantern slides, moving pictures and newspaper articles, and assists in the management of these local campaigns. The total expenditures for the American Society for the Control of Cancer in 1925 were $56,975.04; a campaign is being conducted for an endowment of $1,000,000 to relieve the anxiety due to the fact that more than half of the annual income now is obtained through temporary grants from financial foundations. This campaign was undertaken only after careful study of every possible method of financing the society, and up to June 18, there had been contributed for endowment $333,515. The society has arranged a meeting of eminent students of cancer to be held at Lake Mohonk, N. Y., in September; throughout the year, in many parts of the country, a more than usual intensive campaign of education will be carried out. The headquarters of the society now is at 25 West Forty-Third Street, New York, and the managing director, George A. Soper, Ph.D.

Bequests and Donations.—The following bequests and donations have been announced recently:

Montefiore Hospital, New York, $50,000, by the will of the late Henry F. Elias.

The Presbyterian Hospital, New York, and the Greenwich Hospital, Greenwich, Conn., $100,000 each, by the will of the late John Kennedy Tod.

The Warren Hospital, Phillipsburg, N. J., a trust fund of $5,000, by the will of Mrs. Mary A. S. Reese, the income from which is to be used for beds for the care of poor American-born patients.

Misericordia Hospital, New York, $1,000 and one half of the residue; Servants of Relief for Incurable Cancer, $1,000, and Mount Sinai Hospital, New York, $500, by the will of Mary F. Fitzgerald.

Mountainside Hospital, Montclair, N. J., $25,000, and the New Jersey Orthopedic Hospital, $20,000, by the will of Henry S. Chapman, Glen Ridge.

Hillsboro Hospital, Hillsboro, Ill., $10,000, by the will of the late William F. Welge.

The Medical Department of the University of Georgia, $10,000, and the Children's Hospital, Augusta, $5,000, by the will of the late Mrs. Julia F. Moore.

The Jewish Hospital, Brooklyn, $10,000, by the will of the late Jennie Kutz.

St. Joseph's Hospital, New York, and the Servants for Relief for Incurable Cancer, each $250, by the will of James H. McGean.

St. Mary's Hospital, Hoboken, N. J., $1,000, by the will of Margaret E. Huesmann.

The New York Ophthalmic Hospital, $1,000, and the New York Association for Improving the Conditions of the Poor, $5,000, from the estate of Helen M. Thompson.

The Northern Liberties and the Eaglesville Sanitarium, $100 each, by the will of the late Dora Miller.

The Middletown Hospital, Middletown, Ohio, $4,000, by the will of Arthur D. Lefferson.

The Pasadena Hospital, $50,000, from the estate of the late John McWilliams, Pasadena, Calif.

The Toledo Hospital, Toledo, Ohio, $150,000, by the will of Mrs. Gertrude Croxton, Philadelphia.

The Sandusky County Memorial Hospital, Fremont, Ohio, $35,000, from Mrs. Webb C. Hayes, Fremont, Ohio.

The Jane Lamb Hospital, Clinton, Iowa, $275,000, by the will of the late Mrs. Emma E. Young.

The Long Island College Hospital, $15,000, the Presbyterian Hospital, $10,000, and a contingent bequest for a fund of $300,000 to found the John E. Borne Chair of Medical and Surgical Research in the College of Physicians and Surgeons of Columbia University, by the will of the late Mrs. Ellen M. Borne.

St. Mary's Free Hospital for Children, New York, about $100,000, and the Trudeau Sanatorium, Saranac Lake, N. Y., $25,000, by the will of the late Edmund Penfold.

St. Michael's Hospital, Newark, N. J., $1,000, by the will of Michael J. O'Connor.

The Montefiore Home, $10,000, and the Mount Sinai Hospital, New York, $5,000, by Jacob Rossbach.

The Mount Sinai Hospital, New York, $7,500, from the estate of Siegfried W. Mayer.

The French Hospital, New York, $500, by the will of Celine M. DeComps.

The St. Joseph's Hospital, Memphis, Tenn., $5,000, by the will of Jacob Gerber.

The Presbyterian Hospital, St. Luke's Hospital, Bar Harbor Hospital, Bar Harbor, Maine; the Nursery and Child's Hospital, Baltimore, and the Association for Improving the Condition of the Poor, all of New York, each $25,000, by the will of Augustus Coe Gurnee.

PORTO RICO

Tuberculosis Work in Porto Rico.—During the last two years, tuberculosis dispensaries have been opened in six towns in Porto Rico, and 6,018 patients have been examined and treated; 3,462 patients were classified as clinically positive or suggestive of tuberculosis, while 2,013 presented definite signs of tuberculosis. During this period, there were 670 clinics held, and 13,492 consultations. There are thirteen nurses engaged in the department of health.

Personal.—Dr. Robert A. Lambert has taken up his duties as director of the new School of Tropical Medicine.——Dr. George C. Payne has succeeded Dr. Rolla B. Hill as director for Porto Rico of the International Health Board of the Rockefeller Foundation.——Dr. Pedro N. Ortiz, commissioner of health, addressed a public meeting in Philadelphia, June 30, on "General Health Conditions in Porto Rico."——Drs. Alice M. B. Burke and Garry R. Burke, who have been on the staff of the Presbyterian Hospital, San Juan, for years, are spending their vacation this summer with their relatives in Buffalo, N. Y.

FOREIGN

German Hospital Information Bureau.—The Commission on the Organization of Public Hospitals in Germany is establishing a bureau in Düsseldorf, which will collect information on all questions pertaining to hospital law and organization, the present status and progress of German hospitals, and of hospitals in other countries. The information bureau is being established with the cooperation of several provinces and of various state departments. The commission was created in 1922 as a common representative body; it has assumed the task of elaborating all questions pertaining to hospital organization.

Maternity Hospital Opened.—The Prince of Wales officially opened the Obstetric Hospital at the University College Hospital, May 28. The institution has sixty beds, thirty for gynecologic and thirty for obstetric cases. The obstetric work will be under the care of a special director. A senior member of the medical staff will reside in the hospital to care for complicated cases and to teach the students in obstetric training. The Rockefeller Foundation, in bestowing on University College £1,205,000 in 1920, provided the funds for the construction of this building. A campaign in Great Britain to provide an endowment of £180,000 for this hospital has been successful.

Prize Essays.—The directors of the *Medical Journal of South Africa* offer prizes for the best three essays submitted on or before December 31 on one of the following subjects:

(*a*) Dental caries in native children in kraals or in urban areas.

(*b*) Frequency of infestation with and pathologic conditions due to intestinal parasites among Europeans or natives, and the treatment.

(*c*) Surgical tuberculosis in South Africa and its treatment.

(*d*) Etiology and pathology of chronic diarrhea, with especial reference to South Africa.

The competition is open to native medical students or medical practitioners, even though they may temporarily reside outside South Africa. Two or more persons may collaborate in writing an essay. The prizes will be 100, 60 and 40 guineas, respectively.

Plan to Combat Overcrowding in Contract Practice.—The *Deutsche medizinische Wochenschrift* hails as very important the recent discussion at the annual assembly of the Hartmann League—the great medical organization which is constantly seeking to safeguard the interests of the profession in Germany—on ways and means to counteract the overcrowding, especially in contract practice with the compulsory health insurance organizations. The plan proposed is to award a pension to physicians in this *Krankenkassen* practice who are willing to retire voluntarily from this work at the age of 70 or even of 60. The funds for this are to be raised by increasing the dues and initiation fees, and by other means. The government is to be asked to forbid *Krankenkassen* practice to medical state officials on full pay, and to arrange that all medical state officials shall be appointed on a full-time basis. Analysis of the field shows that the supply of physicians for contract practice is fully covered by the present numbers of qualified or soon to be qualified physicians, and the government is to be asked to forbid social insurance contract practice to new graduates for ten years after the present year. The only exceptions should be the sons and daughters of physicians; if they insist on choosing a medical career after the warning of their fathers' experience, it is evident that they must have a special calling for it.

Personal.—The *Hospitalstidende* mentions that Dr. Kjœrgaard, surgeon in chief of the Sundby Hospital, has been appointed to the chair of surgery at the University of Copenhagen left vacant by the retirement of Prof. T. Rovsing. The committee in charge of the appointment consisted of Professors Schaldemose, Lendorf and F. C. C. Hansen, and they selected Dr. Kjœrgaard from the eight candidates without competitive procedure.——Drs. Borberg, Copenhagen, and Sæthre, Oslo, are to open the discussion on neurosyphilis, the topic appointed for the third Scandinavian Neurologic Congress, to meet at Oslo, Sept. 17, 1926.——Among the research workers, aided by a certain endowment in Norway, are Dr. P. F. Holst, who is studying "Leukocytes in Pernicious Anemia"; Dr. A. Tanberg, "Influencing Tadpoles by Diet"; Dr. T. Skaar, "Experimental Rachitis in Dogs"; Dr. G. Langfeldt, "Endocrine Therapy in Mental Disease," and Dr. K. Hansen, "Determination of Fat, Water and Ash Content of Living Human and Animal Organisms."——Dr. P. Delmas, professor of obstetrics at the University of Montpellier and the local medical syndicate won their suit against a man who had carved on his wife's tomb "Victim of the Professors." The court ordered the man to remove the inscription, with a penalty for every day of delay, and to pay 500 francs to the syndicate and 1 franc to Professor Delmas.

London School of Hygiene and Tropical Medicine.—The cornerstone of the London School of Hygiene and Tropical Medicine was laid by Mr. Neville Chamberlain, minister of health, July 7, and the steel structure for the new building is now being erected. About five years ago the ministry of health appointed a committee to investigate the needs of physicians for postgraduate work, and the British Medical Association submitted a memorandum to the committee advocating the establishment of a postgraduate medical school and also of an institute of state medicine, both to be associated with the University of London. The financial arrangements were solved by the Rockefeller Foundation, which offered $2,000,000 to erect a building, and later about $20,000 a year to provide a director and staff to make preliminary arrangements regarding the building and its work, provided the British government accepts the responsibility of maintaining the school and providing a staff. There will be five floors, the upper two floors being recessed, and preliminary arrangements provide for six main divisions: the principles and practice of preventive medicine, general sanitation, administration; epidemiology and statistics; medical zoology; bacteriology and immunology; physiology, principles of hygiene, and applied physics. The school is intended to accommodate 250 students, 100 of whom will engage in the study of tropical medicine. About one sixth of the total space will be devoted to research work.

Government Services

Navy Personals

Lieut. Comdr. William T. Lineberry has been transferred to the Naval Hospital, Norfolk, Va.; Lieut. Comdr. Sankey Bacon, from the navy yard, Washington, D. C., to the U. S. S. *Sirius;* Lieut. Comdr. William E. Findeisen from the Receiving Ship *New York* to the navy recruit station, New York; Comdr. Charles E. Ryder from the supply depot, Brooklyn, to the Virgin Islands.——The following lieutenants, junior grade, have tendered their resignations from the navy: David W. Truscott, C. A. R. Lindholm, Samuel J. Roberts and Marion T. Rosser.——Comdr. Charles G. Smith has been recommended transferred from the naval training station, Hampton Roads, Va., to the submarine base Coco Solo, Canal Zone.——Lieut. Comdr. Carroll R. Baker has been recommended transferred from the U. S. S. *New York* to the U. S. S. *Arkansas.*——Lieut. John A. Cloyd, who has been attached to the navy recruiting station, Philadelphia, has tendered his resignation as officer of the navy.

Promotions in Public Health Service

Dr. Joseph W. Mountin was promoted and commissioned in the grade of surgeon, July 17; Dr. Ralph E. Porter was promoted and commissioned in the grade of surgeon, July 15, and Dr. Ralph L. Lawrence was promoted and commissioned in the grade of passed assistant surgeon, June 30.

Patients in Army Hospitals

There were 5,150 patients in army hospitals in the United States, July 3, of whom, 2,665 were active army and navy personnel; 1,786 beneficiaries of the Veterans' Bureau; 136 beneficiaries of the Soldiers' Home, and 563 were on a civilian status. At the corresponding time last year, there were 5,314 patients in these same hospitals. Of the total number 3,621 were in general hospitals, including the station hospital at Fort Sam Houston.

Officers Ordered to Foreign Duty

The Surgeon General, U. S. Public Health Service, has issued orders assigning Surg. Charles W. Vogel to duty at Hamburg, Germany; Surg. David J. Prather at Warsaw, Poland; Surg. Walter C. Teufel at Stockholm, Sweden, and Asst. Surg. Octavius M. Spencer at Cologne, Germany.

Assignments to Hospital Ship

The U. S. Navy will place in commission the hospital ship *Mercy* about September 1, and the following medical officers have been assigned to duty on board:

Commander Abraham H. Allen.
Lieutenant Commander Martin Donelson.
Lieutenant Commander Alfred L. Clifton.
Lieutenant Commander Glenmore F. Clark.
Lieutenant Commander Robert T. Canon.
Lieutenant Irving E. Stowe.
Lieutenant (J G) Everett H. Dickinson.
Lieutenant (J. G.) William A. Strauss.
Lieutenant (J. G.) Lloyd R. Newhouser.

More Reserve Health Officers in Training

The U. S. Public Health Service has issued orders assigning the following physicians, all 1926 graduates, to active duty for training at the following hospitals:

Edwin W. Gates	U. S. M. H. no. 21, Stapleton, N. Y.
William H. Black	U. S M. H. no. 82, Norfolk, Va.
George W. Buchanan	U. S. M. H. no. 21, Stapleton, N. Y.
Francis B. Hand	U. S M. H. no. 19, San Francisco.
Edmund T. Lentz	U. S. M. H. no. 5, Chicago.
John R. Murdock	U. S. M. H. no. 19, San Francisco.
William W. Nesbit	U. S. M. H. no. 82, Norfolk, Va.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

July 24, 1926.

The Public Health

In the house of commons Mr. Chamberlain, minister of health, speaking of the immense drugging under the national health insurance scheme, suggested that it was possible that such measures as the purification of milk and the abolition of preservatives in food might rank in their effect on the maintenance and improvement of the health of the people above the tons of drugs and oceans of medicine that were being swallowed every year. The rate at which cancer was increasing was alarming. Last year the deaths from cancer in this country were 1,336 per million, a rate equivalent to the death of 50,000 persons in our population. It had been estimated that, out of every seven persons who reached the age of 30 in this country, one would die of cancer. He was able to give a more helpful account of tuberculosis, which ranked among the most curable of diseases. But one aspect of the problem gave him great concern—the number of persons who, having received beneficial treatment in sanatoriums, had returned to conditions that involved a recurrence of the disease. In this connection he called attention to the success of the experiment that was being carried out at Papworth, in Cambridgeshire. The village was entirely inhabited by tuberculous ex-service men and their wives and children, and the men were earning their living at industries under the constant care of the medical superintendent. The most remarkable feature of the experiment was that in this village, where every householder was tuberculous, the disease was unknown among the children. The experiment pointed the way to the mitigation or solution of a grave problem. Smallpox was rapidly increasing in this country. In 1922 there were 973 cases; in 1923, 2,500 cases; in 1924, 3,800 cases; in 1925, 5,300, and in the first six months of this year, 5,500. The disease was now present in a mild form, but in the past the mild form had coexisted with a severe form. If this form returned, some of those who fulminated against vaccination would rush to the vaccination officer. A good deal of alarm had been created by the very distressing after-effects of epidemic encephalitis. There had been some very painful cases of after-effects showing the moral changes. The disease appeared to be distinctly on the wane. In 1924 the number of cases was 5,039. In 1925 it came down to 2,635, and therefore he thought they were justified in drawing the conclusion that this complaint, which appeared so suddenly and developed so rapidly, had reached its maximum and was now passing away.

Cancer Research

The annual report of the British Empire Cancer Campaign, just issued, points out that the most striking feature is the fact that the cancer-producing tars and paraffins are largely those which have been heated in manufacture to a very high temperature. Something occurs at these high temperatures that effects a change in the substances subjected to them and endows them with the mysterious cancer-producing power. So far, no light has been thrown on the nature of this change. The workers at the Cancer Hospital—Drs. Leitch, Kennaway, Fry and their assistants—believe that they have disposed of the idea that the presence of one cancer protects against the growth of others. They have not, so far, been able to find any support for the virus theory of cancer causation as propounded last year by Dr. Gye. This theory has also recently been assailed by American workers. In treatment, efforts are being made to find some substance that will be lethal for the cancer cells but not for the normal cells of the body. There seems to be little in the idea that tar produces cancer because of, or by means of, the arsenic contained in it. The work at St. Mark's Hospital with relation to simple cancerous tumors is of great interest. Apparently cancer of the large bowel is usually preceded by the appearance of a large number of small and, in themselves, harmless little growths. At the Lister Institute, Dr. Lumsden has obtained an "antiserum" which has proved efficacious in causing cancers in rats to disappear. His work presents all sorts of new problems. It is not, unfortunately, possible to make any application of it, as yet, to human needs. Prof. R. T. Leiper has disposed once more of the theory of "cancer houses" even in its most scientific form. The theory was revived some time ago as the result of the discovery of Fibiger of Copenhagen that cockroaches played the part of host to a worm capable of causing cancer in rats. The cockroach as a carrier of agents of human cancer has been acquitted by Dr. Leiper.

Proposed International Union of Medical Organizations

A movement led by Dr. Fernand Decourt, president of the Union des syndicats médicaux de France, for an international union of medical organizations was discussed at a recent meeting of the council of the British Medical Association. The scheme arose out of a meeting of certain foreign representatives with the medical secretary of the British Medical Association. A letter was afterward sent by Dr. Decourt to the secretaries of medical organizations in various countries suggesting that such an international union might be formed to serve as a center of information, with a permanent secretariat, the council of such a union consisting of two members for each nation taking part. The subjects likely to be dealt with by the secretariat would be the various forms of state or other insurance, contract practice, control of the profession, medical ethics, medical benevolence, hospital questions, and the like. A preliminary meeting has been summoned in Paris, July 15-19, unfortunately at the time of the annual session of the British Medical Association. A list of representatives of fourteen countries was furnished as having already made adhesion. The object of the union would be to constitute a center of information and a means of liaison between the national medical groups in order that each of them might be enabled to profit by the experience of the others in the study of the numerous problems that concern physicians. There would be constituted international archives of information on the subjects mentioned above and similar matters, where each group would be able to get information according to its needs. An annual subscription of 20 Swiss centimes (about 4 cents) for each member of the organization coming into the union was suggested. It was stated that the American Medical Association, while agreeing that the idea might be very useful, had decided to postpone action until the proposal had been considered by the British Medical Association. A resolution was carried that the council accept in principle the desirability of the international association of medical organizations, and send representatives (or a representative) of the association to the meeting if the date is convenient, it being understood that the association reserves its liberty as to joining such a body until it knows the arrangements proposed.

Enlarged Models of Disease-Carrying Insects

A small but interesting collection of models of disease-bearing insects has been arranged by the British Museum (Natural History). Major E. E. Austen, the entomologist who has superintended the exhibition, points out that the total number of kinds of living insects at present recognized has been estimated at not fewer than half a million, yet only a small fraction appears to be concerned in the spread of disease, either in man or in domestic animals. Among insects, the known disease carriers probably amount to fewer than sixty species, while of the ticks, the kinds proved capable of spreading disease scarcely reach a score. Owing to the small size of disease carriers among insects and ticks it is difficult, if not impossible, by exhibition of actual specimens alone to make their outward characteristics intelligible to the general public. On the other hand, drawings however well executed sometimes fail to carry conviction. A system of greatly enlarged models of representative species has therefore been adopted, the magnification employed ranging from 20 to 200 times linear (the last in the case of the male and female plague flea). The species represented include malarial, yellow fever and other mosquitoes; the tiny, midgelike carrier of sand-fly fever; a small, West African horsefly conveying Calabar swelling; two kinds of tsetse flies which carry the parasites causing tryanosomiasis and nagana; the house fly; plague fleas; the body louse; two forms of ticks, one of which affects man, the other domestic animals; and the itch mite. In the accompanying explanatory labels, technical terms have so far as possible been avoided. The models, which are of wax and wherever possible are accompanied by others showing the preliminary stages of the species represented, are the work of three gifted artists, Mrs. E. D. Blackman, Miss Grace Edwards and Mr. A. J. Engel Terzi, and have been constructed under the expert supervision of specialists on the staff of the museum; they are believed to form a series without rival elsewhere.

Nursing Home Abuses

The report of a select committee on nursing homes appointed by the government has just been published. Many abuses are found to exist. Matrons of nursing homes are often completely unqualified, and as there are frequently no qualified nurses in these homes, nursing is carried on by housemaids. Several cases have been reported in which the matron in charge is frequently drunk. In other cases there is no staff beyond the keeper of the home and perhaps her husband or a relative. Overcrowding is said to exist, even in some of the better class homes. Serious allegations were made as to the neglect of patients. Owing to the insufficiency or lack of qualification in the staff, patients, particularly of the senile chronic type, are left entirely to administer to their own wants, although often incapable of doing so. They frequently develop bedsores as the result of prolonged neglect. They are rarely washed. The bed linen is changed at infrequent intervals, even when soiled. The rooms are verminous. No adequate protection is taken to prevent dissemination of contagious or infectious diseases, and frequently patients are unable to obtain any assistance when they require it. The food is scanty and often unsuitable. Senile patients, practically put away in a cheap home by relatives who take little or no further interest in them, suffer great indignities, are very unhappy, and are too frightened to make any complaint.

Some important recommendations are made. It is proposed that legislation shall be prepared to set up a scheme for the registration and inspection by county and borough councils of all nursing homes. The committee recommends that the inspection shall be limited to the general suitability and organization of the home, and shall not embrace any inquiry into the medical records or private affairs of patients. Among other recommendations are that: the supervising authorities should have power to lay duties on a committee on which physicians and nurses should be represented; all types of nursing homes, including maternity homes, should be included, though certain publicly controlled institutions might be expressly excluded and certain charitable organizations might be exempted for definite periods; no home should be exempt on the ground that it is controlled by a physician, and appeals against refusal or cancellation of registration should be allowed to a referee appointed by the minister of health. It should normally be a condition precedent to registration that the matron or other person in charge of the nursing in any registered nursing home be a fully qualified nurse; and if and when nursing becomes a more popular and better paid profession, the extension of this condition to a certain proportion of the staff employed in the home will also become desirable.

PARIS

(From Our Regular Correspondent)

July 22, 1926.

The "Medical Week"

Following the example of Brussels, Paris celebrated from July 14-19 its "medical week," or "journées médicales," which proved a marked success. Prof. Fernand Widal served as chairman, Professor Balthazard as commissary general and Dr. Dujarric de la Rivière (of the Pasteur Institute) as general secretary. The opening session was held at 9 a. m., July 15, in the Grand Palais in the presence of the president of the republic and several ministers. The first address was delivered by Professor Calmette of the Pasteur Institute, who devoted an hour to the presentation of the discovery of his vaccine against tuberculosis. He set forth that, after two years of experimentation, a series of 11,208 new-born infants had received, during the first ten days after birth, three doses of the vaccine at intervals of two days, or, per dose, 6 mg. of bacillary culture grown on ox bile diluted with 5 per cent glycerin, containing a total of 240 million bacilli. These infants were, for the most part, the offspring of tuberculous parents and destined to be raised by their parents; that is to say, in a contaminated environment. The ordinary mortality under such conditions is in France 25 per cent for the first two years. In the children thus vaccinated, the mortality for the first two years was 0.9 per cent, the failures being attributed by Calmette to infants who became infected, during intra-uterine life, by sporular forms of the tubercle bacillus capable of penetrating the placenta, the reality of which has been demonstrated by the researches of Professor Arloing of Lyons.

Several papers were presented on that day and the days following, in the various hospitals and at the special meetings of learned societies, by Dr. Pauchet on the operative indications of neoplasms of the intestine; Dr. Dartigue, technic of sexual graft in atypical cases; Professor Sergent, lobar tuberculosis; Professor Teissier, treatment of smallpox and alastrim; Professor Marfan, feeding of weak and undernourished infants; Dr. Lereboullet, new method of antidiphtheritic vaccination; Dr. Lévy-Solal, early treatment of puerperal infection; Dr. Lortat-Jacob, cryotherapy in dermatoses; Professor Terrien, technic of removing foreign bodies from the eye; Professor Sicard, diagnostic and therapeutic uses of iodized sesame oil; Professor Lemierre, new indications for venesection; Dr. Pasteur Vallery-Radot, cutireaction in anaphylactic diseases and their treatment by intradermal injections of peptone; Prof. Marcel Labbé, insulin in the treatment of diabetes; Prof. Léon Bernard, antituberculosis hospital centers (assistance and prophylaxis); Dr. Lian, quinidine sulphate in the diagnosis and treatment of arrhythmias (with the telecardiophone allowing collective auscultation of patients at a distance by a group of listeners); Dr. Jules Renault, the constant ventilation of hospital wards occupied by young children; Dr. Lesné, clinical and experimental rickets, and Dr. Armand-Delille, therapeutic pneumothorax in tuberculous children, together with numerous operative demonstrations by surgeons in their respective services (Prof. Jean-Louis Faure, Dr. Pauchet, Dr. De Martel and others). There were also lectures by foreign physicians, Professor Putti of Bologna on arthroplasty in infantile paralysis, Professor Graham (St. Louis) on cholecystography, and others.

There were 2,600 members enrolled at the convention. Among the forms of entertainment were: Opera performance in gala, a banquet at the cercle Franco-Americain, and excursions to Versailles, Berck-plage, Reims and various hot springs.

The exhibit of instruments, of diagnostic and therapeutic apparatus and of medical products, installed in the mezzanine and on the first floor of the Grand Palais, was the center of considerable interest. All the large firms of the city had exhibits of their products, and the booths stretched for a length of 2,500 meters. What attracted the most attention was the exhibit of the Service de santé militaire, which included a new type of field hospital, a new suspension system for ambulances designed to transport the wounded, and, above all, the sanitary airplanes. Two such planes of the type that has rendered such good service in the campaigns in Morocco and Syria were exhibited in the Grand Palais. Dr. Chassaing, who was the promoter of the sanitary airplane, Dr. Picqué of Bordeaux, and M. Julliot of the Aero Club of France gave lectures and demonstrations on the subject to the conventionists, and on the afternoon of Sunday, July 19, at the Bourget Aerodrome, those in attendance at the convention were invited to participate in several flights in sanitary airplanes.

The Disagreement Between the Medical Associations, or Syndicats

A serious controversy has separated into two camps the medical organizations *(syndicats)* of France. For many years, the Union des syndicats médicaux has been the one central organization by which were grouped the departmental societies, or *syndicats,* which constituted the general assembly, which met each year in Paris. The "Union" has acquired a large measure of influence, and its decisions have often been accepted by the national government. Its delegates have always been called on for their opinions in connection with the preparation of laws pertaining to the practice of medicine, industrial accidents, etc. Their delegates have been consulted in the elaboration of the fee schedule to be applied to the industrial insurance companies and to the mutual aid societies.

The process of drafting the proposed law for the organization in France of health insurance societies after the manner of Krankenkassen in Germany, and those that have been allowed to continue their existence in Alsace-Lorraine since its reannexation to France, has divided the medical organizations, or *syndicats,* and last year an open rupture ensued. The recalcitrants who separated from the union have established a rival organization under the name of "the federation." The proposed law pertaining to social insurance which the socialist deputies are endeavoring to impose appears, in truth, to be fraught with peril for the physicians. Many of the political elements in parliament regard it with distrust. It is based on a triple contribution of the state, the workman and the employer. The portion that the state will be required to pay is estimated at five billion francs annually, which is a terrifying sum in view of the present condition of the national budget, already overloaded with debts. As for the workmen themselves, their unions have already announced that they will not accept any proposal to retain a portion of their wages to be applied on social insurance, which will compel the employers to pay the amount that was to be exacted of the workmen, and will increase at once the prices of merchandise and raise the cost of living for the whole population.

This untoward project has been in course of preparation for three years, and no minister has had the temerity to carry it before parliament. However, a report of Senator Chauveau has been presented to the senate, which serves as a basis for the preparatory work already undertaken by the medical organizations, which concerns the fees that are to be established for medical visits, medical care and operations. The fees are said to be very low. They are to be imposed, however, by the Caisses d'assurances, or health insurance societies, which will become very powerful, and, as their clientele among the working classes will be dependent on these *caisses,* physicians are justly alarmed over the situation that faces them, especially those whose patients are derived mainly from the working classes.

The medical profession confronts at present two attitudes: (1) That of the Union des syndicats médicaux, a quasi-official organization, accustomed to treat with the public authorities and which has indicated a willingness to discuss the question of fees with the Caisses d'assurances and to submit a minimum schedule, and (2) that of a certain number of *syndicats* which refuse to enter into any discussion with the *caisses* and which declare that do to so would be tantamount to allowing themselves to be reduced to a wretched condition of slavery, an example of which is furnished by many of the physicians of Alsace-Lorraine, where this form of social insurance has been in force for the last twenty years or more. In Alsace-Lorraine, these *syndicats* assert, the *caisses* have reduced a good part of the physicians to mere wage earners, poorly paid and overworked. Even hospitals in many instances belong to or are under the control of the *caisses,* which furnish care of all sorts to their clientele without reference to the physicians. The medical profession of Alsace-Lorraine is thus divided into two groups, one harshly or even rudely treated by the *caisses* and merely able to exist, and another group which is independent of the *caisses* but which is compelled to renounce entirely all claims to patients among the working classes, which, in certain regions, constitute the chief source of income.

It is the unfortunate experience of Alsace-Lorraine that has caused a number of medical societies, or *syndicats,* especially in regions in which the working classes predominate, to refuse to negotiate with the *caisses d'assurances* and to demand that the whole medical profession shall do likewise, so that every physician may be free to demand of his patients among the working classes, even though members of the *caisses,* the remuneration that seems just in each case.

The Union des syndicats, or at least the majority of its members, entertained different views, and has persisted in entering into negotiations with the *caisses.* It seems to be influenced by the desire to preserve the old prestige of an organization which is almost official in character and whose opinions are always sought. The independence of the physician dealing with the workman insured in the *caisses* might seem to it a grave infringement on the authority of the Union des syndicats. It must be borne in mind that this opinion is shared chiefly by the physicians who have no patients among the working classes and who would not be likely to suffer from the demands of the *caisses.* As there appeared to be no chance of a compromise between the two parties, the rupture occurred and a dissenting "féderation" was formed.

The general assembly of the Union des syndicats médicaux, which was recently held in Paris, sought to bring about a reconciliation between the contending factions, knowing full well that it would lose much of its authority by the dissension. Two whole days were devoted to discussion, which at times assumed a violent form. It may be well to state that many members of the "union," while they have not severed their connection with that body, share nevertheless the opinion of the dissenters and demand that physicians shall be allowed to determine their fees in each case. Finally it was decided to appoint a delegation of five members charged with the duty of reaching an understanding with another delegation of five members designated by the federation. But the federation demanded that the representatives appointed by the union be changed, and that members should not be allowed to serve who had already taken an open stand on the question; more particularly, M. Lenglet, the secretary general, assigning as the reason for their position that it would be easier to reach an understanding if the delegates chosen were less entrenched in their opinions. The assembly of the union refused to accept these conditions and would not disavow its secretary general, so that, for the time being, the two camps are resting in their positions. What makes an understanding difficult is the fact that the various medical organizations, or *syndicats,* view the question of social insurance from entirely different angles, depending chiefly on whether they represent regions in which the working classes predominate or not. The medical organization, or *syndicat,* of Paris and of the Seine, and the *syndicats* of other large cities, are not much interested in the controversy, regarding the maintenance of the position of the union as chiefly a question of prestige. But they seem to forget that the prestige of the union has been much impaired by the divisions in the medical profession.

ITALY

(From Our Regular Correspondent)

July 15, 1926.

Vital Statistics

According to information furnished by L. Manfredi to the *Rivista sanitaria siciliana,* the population of Italy has increased from 25,000,000 in 1862 to 42,000,000 in 1926, which is an augmentation of about 70 per cent in a little more than sixty years, and it is still increasing. However, earthquakes caused a loss of 100,000 lives; influenza in 1918 caused 400,000 deaths, and the war occasioned 560,000 deaths and a reduction in births of 1,500,000. The mortality, which in 1880 was 30, had been reduced in 1921 to 17 per thousand. The average length of life has increased, for of the persons born in 1880 scarcely 50 per cent reached age 35, while the persons born in 1919 will, according to calculations, attain an average age of 53.

Two New Institutions in the Psychiatric Field

The first Italian neuropsychiatric hospital, recently established at Arezzo, is housed in a new pavilion attached to the Manicomio Provinciale (psychopathic hospital). It will accommodate patients with organic nervous lesions in whom the mental faculties are not impaired. In Florence, in connection with the Humbert I Institute for Backward Children, a school in which backward children can pursue special courses and secure diplomas has been established.

The Call of Italian Scientists to South America

The head of the Argentine Republic has invited Prof. Vittorio Ascoli, director of the Clinica Medica in Rome, and Prof. G. Alessandrini, director of the bacteriologic institute of that university, to represent Italy at the medical congress to be held in Buenos Aires. The two scientists have already departed for Argentina, accompanied by Dr. Pozzi. They will speak at the congress on the results of Italian studies on malaria.

The First International Congress of Maternal and Infant Welfare

The international association of infant welfare held this year in Rome its first annual reunion. In addition to the members of the central association (Brussels), the following countries were represented: Italy, United States, France, Switzerland and Sweden. The congress accepted the proposal of Rollet to divide the assembly into a hygienic and a medicolegal section, to work, in the main, independently but to unite for the discussion of subjects of a general nature.

Before the hygienic section, Professor Rosco gave an account of the condition of children in the colonies, and spoke in favor of immigration of children in the colonies; more particularly, illegitimate children, with the object of favoring early acclimation and reducing the present high mortality of children, which is especially noticeable among illegitimate offspring. Dr. Del Piano (Rimini) and Professor Modigliani (Rome) were opposed to the idea, and set forth that reduction in the mortality of illegitimate children could be brought about by giving to mothers the means with which to recognize and raise their own children.

Prof. Rocco Jemma followed with a paper on familial prophylaxis against tuberculosis, in which he favored antituberculosis vaccination. Professor Delilles explained the benefits of the Calmette method of vaccination and disapproved the Grancher method. The assembly passed a resolution favoring in principle antituberculosis vaccination.

Professor Caronia discussed the prophylaxis of rickets, demanding improvement in hygienic and dietetic conditions and recommending special ambulatory consultation centers. Delilles praised the efficacy of ultraviolet rays. Moringer of Strasbourg recommended the general action of the sun. Jundell of Stockholm emphasized the value of cod liver oil.

The medicolegal section discussed the trades in which the morality of children appears particularly jeopardized and also the obligation of requiring the presumable father of an illegitimate child to pay the mother a fixed sum weekly or monthly.

Before the combined sections, Professor Valagussa of Rome explained recent Italian legislation (December, 1925, and April, 1926) for the protection of children.

The hygienic section then visited the Instituto di case popolari, the *Case dei bambini,* the ambulatory dispensaries, the consultation centers, the children's bathing establishment and the children's playgrounds. Thereupon, Professor De Sanctis presented before the combined sections a paper on the capacity of abnormal children for education. The conventionists then visited the exhibits.

Bismuth Salts in the Treatment of Ocular Syphilis

Before the Academy of Medical and Natural Sciences of Ferrara, Dr. Casati presented five cases of ocular syphilis in which he had employed bismuth salts. There were two patients with iridocyclitis, one with bilateral neuroretinitis, and two with heredosyphilitic parenchymatous keratitis. In all the cases, which presented a positive Wassermann reaction, a rapid cure was effected. During the treatment, no very serious accidents were observed. Examination of the urine was always negative. The injections were well borne even when given on alternate days. In the parenchymatous forms there was scarcely a trace of the disease after the bismuth treatment. According to the author, bismuth is especially effective in cases in which arsphenamine treatment (also combined with mercurials) had given negative or only slightly positive results. It does not have the contraindications of arsphenamine treatment and has a much more rapid therapeutic action.

Commemorative Ceremonies

At Spezia ceremonies were recently held in memory of Prof. Edoardo Bassini, the proponent of the well known method of operation in inguinal hernia.

The medicosurgical society of Pavia celebrated recently the fiftieth anniversary of the cesarean operation as proposed and performed by Prof. Edoardo Porro in the Clinica Ostetrica of Pavia.

BELGIUM

(From Our Regular Correspondent)

July 10, 1926.

The Brussels Medical Convention

The sixth session of the Brussels Journées Médicales was highly successful. A prominent feature was a vast international exposition of the arts and sciences as applied to medicine, surgery, pharmacy and hygiene.

Prof. J. Demoor presided at the convention. Maréchal Lyautey delivered an address on "La *médecine au service de* la colonisation." He referred to a telegram that he had sent during the Madagascar campaign to his commander, General Gallieni, as he entered the country of certain rebellious tribes among whom smallpox was raging: "If you can send me four more physicians, I will send back to you four companies." Marshal Lyautey emphasized the need of uniform action and central control, of medical supervision, and of economy. Colonial expansion has its dark sides, he continued, but, if anything justifies and ennobles colonization, it is the activities of the physician viewed as a mission and an apostleship.

Tuberculosis and the Schick Test

Before the Société belge d'études sur la tuberculose, Blankoff and Sander have presented the results of their researches on the Schick test as applied to 152 children (eighteen of whom were suffering from nontuberculous affections). The search for bacillus carriers was carried on at the same time. The authors noted an increased tendency to negative reactions in children gravely affected with tuberculosis. Persons suffering from grave tuberculosis often present a Schick reaction accompanied by marked hypothermia together with diminution of the local symptoms. While tuberculosis is not a contraindication to employment of the Schick test, it should not be accorded the same value that it would otherwise have.

The Draft of a Law on Physical Education

The minister of arts and sciences is planning to introduce in parliament a law pertaining to the physical education of youth. Instruction will be organized in the schools. Every commune must possess sufficient equipment for the schools and clubs. The latter would be expected in turn to place their quarters at the disposal of the state. Professors and instructors would be held responsible for the carrying out of the regulations, and efficient medical supervision and control are assured.

Surgery in Pulmonary Tuberculosis

Before the Société d'études sur la tuberculose, Dr. Toussaint has presented a study based on thirty-seven surgical interventions in cases of pulmonary tuberculosis. He has performed twenty-eight simple phrenectomies, five phrenectomies combined with resection of the scalenus muscle, two phrenectomies combined with a partial thoracectomy involving the second and third ribs, one partial thoracectomy involving the second and third ribs, and in one case block of the phrenic nerve by injection of cocainized alcohol. The author endeavored to obtain a combined procedure that would entail less shock than wide costectomy by attacking the bone, muscle and nerve barriers that oppose the retractility of the wound. Toussaint adds to this technic the resection of the long thoracic nerve which supplies the serratus anterior, the only essential inspiratory muscle accessible without causing functional disturbances in the movements of the shoulder.

A Medical Directory

The Société d'exploitation de Spa has published a volume entitled Annuaire médical de Belgique, des colonies et du Grand Duché de Luxembourg. The volume contains a complete list of the physicians, pharmacists and dentists in the countries named, including their consultation hours; also the names of all the hospital and sanitary establishments, policlinics, laboratories, clinics, homes for convalescents, colonies for children, etc.

A New Publication

The first issue of a new publication, the *Revue médicale belge*, has appeared. The new review contains abstracts of all medical articles, arranged according to subjects and printed on only one side of the page. The pages are perforated so that any page may be readily removed.

Medical Relations Between Spain and Belgium

Relations between Spanish and Belgian scientists have until recently scarcely existed. However, a committee for the promotion of a better understanding between the two countries has been formed. The chairmen of the respective Spanish and Belgian sections are both recipients of the Nobel prize, Spain being represented by Prof. Ramon y Cajal and Belgium by Prof. Jules Bordet.

Proposed Medical Tours

Its previous medical tours having proved successful, the *Bruxelles médical* is organizing for the near future the following three excursions: (1) a tour of the Canary Islands, to start from Antwerp and returning by way of Spain or Morocco, Aug. 30-Sept. 20, 1926; (2) a cruise of the ports of France with stops at Lisbon and Tangier, and (3) a cruise of the Orient for students of all the faculties.

BERLIN

(From Our Regular Correspondent)

July 17, 1926.

Medical Profession Wants Official Separate Recognition

The term "physician" is defined under the trade-regulation law. Forty-six years ago the convention of physicians passed resolutions favoring regulation of the granting and the withdrawal of the right to practice, definition of rights and duties, nomination of official professional representatives, and courts of arbitration and honor. The Reichstag supported the proposition, but it has never, in spite of urging, left the federal council. At the convention of physicians the last week of June in Eisenach, Dr. Stauder (Nuremberg) proposed regulation of physicians in Germany. By means of regulation, German physicians will be united and their problems, rights, duties and legal position will be defined. In this way the abilities of the German profession of physicians will be used in a right way for the health of Germany. The organization will have three parts: local associations, provincial assemblies and, as supreme head, a state assembly (Reichsaerzte-Kammer). Since several states, such as Prussia, during recent years have constituted assemblies of physicians, with large authority, it is thought that conditions are favorable for regulation and organization. It is anticipated that the few portions of the trade laws which concern physicians will be replaced with direct regulatory provisions.

Besides these motions, others were brought up for discussion. The leading idea of one proposal is: The profession of German physicians furnishes health service for the German nation. This occupation is not a trade with earning its only purpose but is imbued with the higher view of care of the individual and community health. It follows instructions on special practice, i. e., that in cases of urgent danger necessary help cannot be refused, that it will take part in the fight against epidemics over and above its legal duties, that intra-uterine life and the ability to reproduce will be preserved, if danger to the life of the mother does not prevent it. The regulations concerning medical practice must protect the sick, and, if possible, eliminate conflicts between the physicians themselves. Treatment by letter or at long distance is not allowable, and care is to be taken concerning certificates and all medical evidence. Bills must conform to a fee scale, except that the paying capacity of the patient has to be taken into consideration. In indubitable urgent cases, the treatment should not depend on payment in advance. Physicians should not accept rebate, get practice through grant of benefit to others, or apply for positions that are not free to all physicians; they should conduct themselves so that the sick and the reputation of the profession will not suffer. When a patient wants a second physician, the physician in charge may not oppose; also, a consultation of two physicians with a third ought to be refused only for important reasons. A physician ought not to refuse help to another physician in urgent cases without important reasons. Expression of scientific, political or religious opinions free from objection will not be considered an infraction of the regulations. In special cases there will of course be disagreement about what is "free from objection." The propositions were accepted with few corrections at the convention of physicians.

Sex and Facial Characteristics

At the last meeting of the association for physiognomical studies, the head of the institute, Sanitätrat Dr. Hirschfeld, spoke on the subject of "Sex and Physiognomy." The well known sentence, that the history of the individual is written in his face, has in the normally developed man only relative value. The opinion that quantity and quality of the sexuality is related to the development of special types of faces or features is on precarious foundation, although in some cases it is correct. In early adolescence as in old age, the facial development of the sexes approaches each other to a great extent. As far as facial appearance is concerned, one can often be in doubt of the sex of a child, although at puberty the greatest differences exist.

A Special Department for Chronic Encephalitis in Göttingen

The first of June, a special station for patients with complications of epidemic encephalitis was opened in connection with the nerve clinic of the University of Göttingen. Only patients with mental disturbances will be accepted. The department is equipped both for studies of pathogenesis and etiology of encephalitis and for treatment of patients.

Marriages

Herbert Myron Tolfree, Commander, U. S. Navy, to Mrs. Pauline Jones Kirkpatrick of Oakland, Calif., August 2.

Theodore McKee Trousdale, Richlands, Va., to Miss Mabelle Lee Mason of Norfolk, at New York, July 3.

William P. Hoffman, Davenport, Iowa, to Miss Marie Burnette of Lost Nation, at Davenport, May 18.

Thomas Harold Copeland, Bedford, Ohio, to Miss Edna Margaret Miller of Fairmont, W. Va., June 9.

Miletus Brown Jarman, Richmond, Va., to Miss Jeannette Talbott Morris of Gainesville, Fla., June 28.

Alfred R. Shands, Jr., Baltimore, to Miss Elizabeth Prewitt of Lexington, Ky., in July.

Granville Allison Bennett, Iowa City, to Miss Lenora Webber of Davenport, May 15.

Lillian Herald South, Louisville, Ky., to Judge H. H. Tye of Williamsburg, Ky., July 9.

Harvey W. Sears, Bluffs, Ill., to Miss Jessie Austin of Jacksonville, June 27.

Henry J. Ravold to Miss Jessie Gordon, both of St. Joseph, Mo., July 15.

Deaths

Samuel M. Wylie ⊕ Paxton, Ill.; Chicago Medical College, 1878; in 1906 was a delegate from the American Military Surgeons to the International Medical Congress at Lisbon, Portugal, and in 1910 was a delegate from the American Medical Association to the annual meeting of the British Medical Association at London; aged 72; died, July 18, of acute dilatation of the heart.

George Gillespie Buford, Hardy, Ark.; Vanderbilt University Medical Department, Nashville, 1880; formerly professor of nervous and mental diseases, University of Tennessee College of Medicine, Memphis; at one time on the staffs of the Memphis City and Baptist Memorial hospitals, and the Shelby County Poor and Insane Asylum, Memphis; aged 72; died, July 10, of heart disease.

Luther Haymond, Clarksburg, W. Va. (licensed, state board of health, 1903); formerly member of the state legislature; Spanish-American and World War veteran; aged 50; died suddenly, July 17, at the Kessler-Hatfield Hospital, Huntington, of cerebral hemorrhage.

James Lucian Batson, Bessemer, Ala.; Vanderbilt University Medical Department, Nashville, 1900; member of the Medical Association of the State of Alabama; aged 47; died, July 16, at the South Highland Infirmary, Birmingham, of cholecystitis.

Francis Augustine Finnegan, Lowell, Mass.; Medical School of Harvard University, Boston, 1911; member of the Massachusetts Medical Society; formerly on the staff of St. John's Hospital; aged 42; died, June 1, at Worcester, of coronary thrombosis.

Charles Richard Sanderson, Long Beach, Calif.; Keokuk Medical College, 1892; mayor of Montrose, Iowa, 1899-1901, and Waynesville, Ill., 1912-1913, 1919-1920; served during the World War; aged 59; died, July 13, of diabetes mellitus.

Frederick G. Grisier, Columbia City, Ind.; Western Reserve University School of Medicine, Cleveland, 1875; past president and secretary of the Whitley County Medical Society; aged 73; died, July 24, of carcinoma of the stomach.

Anthony J. Burger, Brooklyn; University of Pennsylvania School of Medicine, Philadelphia, 1883; formerly county coroner; aged 65; died, July 21, at St. Catharine's Hospital, following an operation for carcinoma of the rectum.

Edward Stokely Smith, Hodgenville, Ky.; Louisville Medical College, 1879; Bellevue Hospital Medical College, New York, 1883; member of the Kentucky State Medical Association; aged 67; died, July 26, of septicemia.

Thomas Franklin Robinson, Spring Hill, Ala.; University of Nashville Medical Department, 1880; member of the Medical Association of the State of Alabama; aged 70; died, April 14, at Mobile, of heart disease.

Benjamin Harrison King, Granite City, Ill.; Barnes Medical College, St. Louis, 1904; president of the Madison County Medical Society; member of the Illinois State Medical Society; aged 46; died, July 31.

Guy Hastings Greeley, Merrimack, N. H.; Baltimore Medical College, 1891; member of the New Hampshire Medical Society; aged 58; died, May 30, at his home in Thornton's Ferry, of angina pectoris.

James Guy Pratt, Brooklyn; University of Pennsylvania School of Medicine, Philadelphia, 1901; for many years on the staff of the Brooklyn State Hospital; aged 47; died, July 4, of heart disease.

William Albert Lockett, Amarillo, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1872; Civil War veteran; aged 86; died, June 26, of chronic interstitial nephritis.

Charles E. Scott, Warren, R. I.; University of Montreal Medical Faculty, Montreal, Que., Canada, 1900; state senator, 1908-1909; formerly health officer; aged 54; died, July 7, of cerebral hemorrhage.

Oscar Stansbury ⊕ Chico, Calif.; University of Maryland School of Medicine, Baltimore, 1873; for several years member of the state board of health; aged 74; died, July 19, of coronary thrombosis.

Robert G. Timms ⊕ Chicago; Loyola University School of Medicine, Chicago, 1917; for five years member of the city health department; aged 47; died in July, of angina pectoris and arteriosclerosis.

William Major Collins, San Francisco; New York Homeopathic Medical College and Hospital, 1905; aged 45; died, July 9, at the Wakefield Hospital, of general peritonitis, following appendicitis.

Edgar Hadley ⊕ Montrose, Colo.; Medical College of Indiana, Indianapolis, 1900; on the staff of St. Luke's Hospital; aged 59; died in July, of injuries received in an automobile accident.

Thomas E. White ⊕ Fitzgerald, Ga.; Eclectic Medical Institute, Cincinnati, 1905; president of the Ben Hill County Medical Society; aged 47; was killed, June 10, in an automobile accident.

Robert Le Baron, Pontiac, Mich.; University of Michigan Medical School, Ann Arbor, 1861; member of the Michigan State Medical Society; aged 88; died, July 15, of heart disease.

William Harrison Ballard, Pasadena, Calif.; Bennett Medical College, Chicago, 1886; University of Illinois College of Medicine, Chicago, 1889; aged 69; died, July 7, of angina pectoris.

Clifton M. Kelley, Winchester, Ind.; Medical College of Ohio, Cincinnati, 1881; aged 70; died, July 15, at the Randolph County Hospital, of myocarditis and chronic nephritis.

Charles J. Rosengren ⊕ Buffalo; University of Buffalo Department of Medicine, 1897; aged 52; died suddenly, June 25, of pulmonary thrombosis, following acute sinusitis.

William Stokes Sterrett, Marseilles, Ill.; Rush Medical College, Chicago, 1894; member of the Illinois State Medical Society; aged 59; died, July 28, following a long illness.

Richard J. Hogan, Glens Falls, N. Y.; Albany Medical College, New York, 1887; aged 61; died, March 31, at the Troy (N. Y.) Hospital, of pneumonia and heart disease.

Robert B. Wilson, Ellensburg, Wash.; State University of Iowa College of Medicine, Iowa City, 1881; also a druggist; aged 70; died, May 25, at Tacoma, of angina pectoris.

Moritz Bloch, New York; University of Vienna, Austria, 1875; member of the Medical Society of the State of New York; aged 81; died, July 20, of cerebral hemorrhage.

William Thomas Seeley ⊕ Kendrick, Idaho; University of Illinois College of Medicine, Chicago, 1910; aged 53; died, July 4, of injuries received in an automobile accident.

Albert Durrant Watson, Toronto, Ont., Canada; Victoria University Medical Department, Toronto, 1883; L.R.C.P. Edinburgh, Scotland, 1883; aged 67; died, April 3.

Almond M. Hill, Genoa, Ill.; Eclectic Medical Institute, Cincinnati, 1868; Civil War veteran; formerly mayor of Genoa; aged 81; died, July 17, of heart disease.

Milton R. Trumbower, Monett, Mo. (licensed, Missouri, 1898); member of the Missouri State Medical Association; aged 75; died, recently, of diabetes mellitus.

Beauman Newton Keith, Lepreau, N. B., Canada; Medical Department of the University of the City of New York, 1882; aged 69; died, March 25, of heart disease.

William Horace Wickham, Sycamore, Ohio; Columbus Medical College, 1882; president of the Sycamore State Bank; aged 69; died, July 18, of heart disease.

Charles Coleman Reakirt, Cincinnati; Miami Medical College, Cincinnati, 1893; aged 69; died, July 8, at Riverside, Calif., of pneumonia and heart disease.

Frederick George Phillips ⊕ Providence, R. I.; Columbia University College of Physicians and Surgeons, 1902; aged 49; died, July 25, of acute cholecystitis.

Frederick Otto Blaine, Copeland, Kan.; Medico-Chirurgical College of Kansas City, 1903; aged 49; died, July 11, at St. Anthony's Hospital, Dodge City.

Patrick Henry Molloy, Lexington, Ky.; Medical College of Ohio, Cincinnati, 1880; Spanish-American War veteran; aged 77; died, July 21, of myocarditis.

Wesley Asberry Smith, Hearne, Texas; University of Louisville (Ky.) School of Medicine, 1884; aged 73; died in July, of cirrhosis of the liver.

S. R. Fielden, Knoxville, Tenn. (licensed, Tennessee, 1889); aged 63; died, July 17, at the Riverside Hospital of acute suppurative cholecystitis.

Raphael R. Lyons, Crowley, La.; Medical Department University of Louisiana, New Orleans, 1862; Civil War veteran; aged 87; died, June 24.

Harmon H. Whitson, Slaughters, Ky.; University of Nashville Medical Department, 1857; aged 92; died, July 21, of cerebral hemorrhage.

William M. Larrabee, Waupun, Wis.; Rush Medical College, Chicago, 1876; aged 73; died, March 7, at Biloxi, of cerebral hemorrhage.

Walter W. Buchanan, Detroit; University of Illinois College of Medicine, Chicago, 1883; aged 60; died, recently, of cerebral hemorrhage.

James Arthur Van Horn ⊕ Hope, N. M.; Memphis Hospital Medical College, 1893; aged 54; died, July 14, of pulmonary tuberculosis.

James S. Daniels, Omro, Wis.; Hahnemann Medical College and Hospital, Chicago, 1877; aged 85; died, June 15, of chronic myocarditis.

Charles A. Bourland, Greenville, Ky.; Vanderbilt University Medical Department, Nashville, 1868; aged 81; died, July 12, of uremia.

William Datcher, La Grange, Ga.; Meharry Medical College, Nashville, Tenn., 1898; aged 65; died, recently, of chronic nephritis.

Jean Philippi Leduc, Marieville, Que., Canada; University of Montreal Medical Faculty, 1874; aged 73; died, March 29, of heart disease.

J. H. Green, Hartsfield, Ga. (nongraduate); aged 57; died, July 15, at the Archbold Memorial Hospital, Thomasville, of pyonephrosis.

Wilber F. Sharrer, Delphi, Ind.; College of Physicians and Surgeons, Keokuk, 1874; aged 83, died, July 19, of carcinoma of the cheek.

Albert L. McLeod, Westerville, Ohio; Cincinnati College of Medicine and Surgery, 1873; aged 75; died, May 12, of heart disease.

George Minges ⊕ Dubuque, Iowa; Bellevue Hospital Medical College, New York, 1878; aged 71; died, July 20, of tuberculosis.

Leonard Herbert Vincent, Sisters, Ore.; Hering Medical College, Chicago, 1912; aged 56; died in June, of cerebral hemorrhage.

James R. N. Smith, Milltown, Maine; Medical School of Maine, Portland, 1867; aged 81; died, June 9, of cerebral hemorrhage.

George Stratton Farquhar, Newark, Ohio; Miami Medical College, Cincinnati, 1879; aged 71; died, July 21, of cerebral hemorrhage.

J. P. Mathews, Santa Anna, Texas; Missouri Medical College, St. Louis, 1882; aged 68; died, recently, of tuberculous meningitis.

Charles D. Hulbert, Westerlo, N. Y.; Rush Medical College, Chicago, 1902; aged 56; died suddenly, June 7, of lobar pneumonia.

Joseph W. Hall, Cincinnati; Medical College of Ohio, Cincinnati, 1899; aged 53; died, May 22, of acute dilatation of the heart.

William Edward Storey, Kemptville, Ont., Canada; University of Toronto Faculty of Medicine, 1901; aged 49; died recently.

Hollis O. Sarber, Rockford, Mich.; Eclectic Medical Institute, Cincinnati, 1881; aged 69; died, May 15, of diabetes mellitus.

Robert H. Towles, Houston, Texas; Washington University School of Medicine, Baltimore, 1873; aged 70; died, recently.

John Luther Baehr, Winslow, Ark.; Pennsylvania Medical College, Philadelphia, 1861; aged 90; died, May 6, of senility.

Anthon Ellis Russell, Carrabelle, Fla.; Tennessee Medical College, Knoxville, 1895; aged 51; was drowned, March 12.

J. R. Smith, Munday, Texas (licensed, Texas, under the Act of 1907); aged 70; died, March 30, of heart disease.

Daniel Anderson, Custer, S. D.; Eclectic Medical Institute, Cincinnati, 1879; aged 70; died, April 8, of heart disease.

James G. Eberhart, Comer, Ga.; Philadelphia College of Medicine and Surgery, 1854; aged 92; died, June 27.

Charles C. Wiley, Pittsburgh; College of Physicians and Surgeons, Baltimore, 1875; aged 72; died, in June.

James Delmage Wilson, London, Ont., Canada; Trinity Medical College, Toronto, 1875; died, April 28.

Joseph A. Jenkins, Joliet, Ill.; Chicago Homeopathic Medical College, 1899; aged 59; died, July 6.

Reimer Nicel Nintzel, Oshkosh, Wis.; University of Kiel, Germany, 1865; aged 90; died, July 8.

John S. Goode, Myrtle, Miss. (licensed, Mississippi, 1882); aged 70; died recently, of nephritis.

The Propaganda for Reform

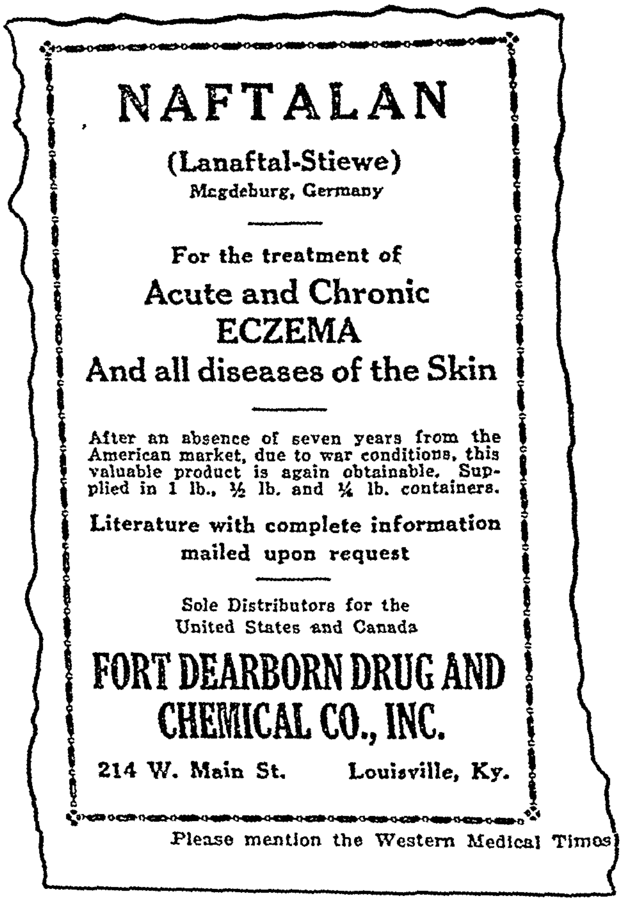
In This Department Appear Reports of The Journal's Bureau of Investigation, of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other General Material of an Informative Nature

NAFTALAN NOT ACCEPTABLE FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. Puckner, Secretary.

Naftalan, according to the Ft. Dearborn Drug & Chemical Co., Louisville, Ky., is manufactured by E. Stiewe, Magdeburg, Germany, and is "a preparation of Russian mineral oils containing about 4 per cent of soap, in the form of an ointment." No further information was furnished the Council in regard to the composition of Naftalan, nor was any evidence submitted to show that the composition and uniformity of the preparation is controlled. It is claimed that Naftalan soothes and relieves pain, prevents inflammation, is antiseptic, protects injured parts from infection, stops itching and irritation, and has extraordinary healing effect. It is stated that Naftalan is principally used in the treatment of acute and chronic eczema, and all forms of skin diseases.



NAFTALAN

(Lanaftal-Stiewe)

Magdeburg, Germany

For the treatment of

Acute and Chronic ECZEMA

And all diseases of the Skin

After an absence of seven years from the American market, due to war conditions, this valuable product is again obtainable. Supplied in 1 lb., ½ lb. and ¼ lb. containers.

Literature with complete information mailed upon request

Sole Distributors for the United States and Canada

FORT DEARBORN DRUG AND CHEMICAL CO., INC.

214 W. Main St. Louisville, Ky.

Please mention the Western Medical Times

In the advertising of the Ft. Dearborn Drug & Chemical Co. it is claimed that Naftalan acts like Ichthyol and the claims made for the preparation are closely similar to those which were formerly employed in the exploitation of Ichthyol for various skin diseases.

The Naftalan advertising consists largely of citations from clinical reports. From these are quoted the following:

> "On burns of the first and second grade, Naftalan (Stiewe) proved a wonderful remedy for relieving pain, cooling the wound, and preventing inflammation, so that in this instance it is far above all other known medicaments. The effect of Naftalan (Stiewe) was further found excellent, for the treatment of the different skin diseases and especially in the cases of acute and chronic eczema, pityriasis, geborrhoea [*sic*], capillitii, and psoriasis where it gave extraordinary healing effects even in cases where every other medicament recommended by the profession failed."
>
> "In case of rheumatism and gout, the patients obtained instant relief of the terrible pains, and by constantly using Naftalan (Stiewe) became completely healed."

No evidence was submitted in substantiation of these uncritical claims and they are inherently improbable. Naftalan is unacceptable for New and Nonofficial Remedies because the information in regard to its composition is unsatisfactory and indefinite and because the therapeutic claims advanced for it are unwarranted.

Correspondence

IODINE IN TUBERCULOSIS

To the Editor:—In regard to the communication of Dr. E. A. Peterson (The Journal, June 26, p. 1995), in which he states that he doubts that any authentic experiments have ever been done to show that iodine breaks down a lung in a tuberculous animal or in man, the following facts may have some bearing:

Several years ago Jobling and Peterson, while working on ferments, showed that iodine had the power of saturating the unsaturated radicals of fatty acids, and that when these fatty acids were acting as antitryptic ferments, saturation of these unsaturated bonds tended to reverse the reaction and liberate trypsin. When it is considered that a tubercle has a high percentage of fatty acids in its composition and that the probabilities are that these fatty acids are acting as antitryptic ferments, the importance of iodine in releasing the trypsin by saturating these unsaturated fatty acids can readily be seen. In fact, it has been proved that iodine is found in quite a noticeable amount in the tubercles when given to a tuberculous animal. Theoretically, it is by its action in this manner that iodine has come to occupy the position it does as a therapeutic agent in breaking down granulomas.

Recently H. W. Butler treated guinea-pigs with potassium iodide and tincture of iodine (*Proc. Soc. Exper. Biol. & Med.* **23**:219). Two pigs were given four drops of potassium iodide by mouth, and one was given one drop of the tincture of iodine daily for fourteen days. The control pig was not treated.

Twenty-one days after the period of treatment, the guinea-pig receiving the tincture of iodine died, and necropsy revealed a generalized extreme tuberculous condition. Forty-five days after treatment was discontinued, the animals receiving the potassium iodide died, and at necropsy a generalized tuberculosis of extreme character was found. Sixty days after the last treated pig had died, the control pig died. Necropsy revealed a generalized tuberculosis, but much less marked than in the treated pigs. The pig treated with the tincture of iodine lived fifty-two days. Another pig treated with potassium iodide lived seventy-five days, and the other, seventy-six days. The untreated tuberculized control pig lived 135 days.

While this series is not very large, it may have some weight. I have had a striking experience in two cases of tuberculosis in which iodine was given.

A white, American boy, aged 18, presented himself with several chronic ulcers on his body, stating that he had been treated by various methods, but none of them seemed to have any effect on the ulcers. Aside from the skin condition, the most outstanding symptom was a rather severe cough. He gave a history of having worked in a thrashing crew the previous summer. While doing this work, he became ill from inhaling so much dust and was confined to bed for several days. He gradually recovered his health with the exception of the cough. It was some months after this that the skin condition arose. Cultures from the skin lesion gave an unquestionable growth of sporotrichosis, and repeated cultures of the sputum gave the same organism. Roentgen-ray and physical examinations of the chest showed considerable chronic involvement, but both the roentgenologist and a rather well known tuberculologist were of the opinion that the sporotrichosis was the disease of the lung and that there was very little evidence of tuberculosis. This patient was given a saturated solution of potassium iodide in ascending doses. For a time his health improved markedly, but after about six weeks or two months, although the skin lesions became greatly improved, his general health began failing rapidly. Cultures of the sputum at this time failed to show any of the sporotrichosis organisms, but numerous tubercle bacilli were found in the stained specimen. There was a rapidly fatal course of pulmonary tuberculosis, and the boy was dead in six months.

A white woman, aged 38, well nourished, presented herself complaining of a chronic cough. She had a 4 plus Wassermann reaction. Roentgen-ray and physical examination of the chest were interpreted by the roentgenologist as being probably syphilis of the lung. She was given antisyphilitic treatment consisting of arsphenamine followed by mercury and later by increasing doses of potassium iodide. After the potassium iodide was given for a few weeks, her health began failing rapidly. At this time the sputum, which had always been negative at previous examinations, showed numerous tubercle bacilli in stained specimen. She was taken off the iodide immediately. However, her health continued to fail. She gave up medicine and took up Christian science, but died a little less than eight months from this period.

The question has occurred to me that with the loss of standing of "patent medicine" among the laity as the result of educational propaganda and pure food laws, could this have any effect on the control of tuberculosis? It is a known fact that potassium iodide was a main factor in some of the most widely sold "patent medicines," and that until within one or two decades ago, it was a widespread custom for the patients who became chronically ill to use these "patent medicines." In *Nostrums and Quackery* there are several illustrations of the tracing of testimonials from persons as being cured by these various agents, and almost without exception they are all found to be dead.

Scott R. Edwards, M.D.,
Allison Hospital, Miami Beach, Fla.

[Comment.—The reasoning is sound, although, as the writer admits, the evidence cited is scanty. It has been recognized clinically for many years that iodine and its compounds have an effect on tuberculous tissues. Following the administration of iodine, patients with tuberculosis are likely to experience an increase in symptoms, particularly expectoration. Moreover, a lighting up of the process can be detected by the increase in physical signs. Advantage has been taken of this fact in the diagnosis of tuberculosis when the physical signs are doubtful. In such cases, after moderate doses of iodine, râles develop in the affected region, and tubercle bacilli may be found in cases in which the sputum was previously negative. Needless to say, the procedure is attended with some danger.

It is generally believed that iodine lights up sluggish tuberculous processes by enhancing the absorption of granulation tissue. However, there has been no direct, conclusive experimental proof for this belief. Cantacuzène (*Ann. d. l'inst. Pasteur* **19**:699, 1905) reported that the absorption of fat-free tubercle bacilli and tuberculous tissue in guinea-pigs was aided by the daily administration of potassium iodide, the iodine salt apparently stimulating the phagocytic property of the macrophages. E. F. Hirsch (*J. Infect. Dis.* **15**:487, 1914) was unable to confirm this. Lydia DeWitt was unable to verify the opinion that tuberculous granulation tissue possessed special reactivity, for she injected compound solution of iodine into a number of guinea-pigs having advanced tuberculosis, and found it no more toxic for these than for normal guinea-pigs. She (Wells, DeWitt and Long: The Chemistry of Tuberculosis, Baltimore, Williams and Wilkins Company, 1923, pp. 407-414) has summarized the literature on this point and on the therapeutic action of iodine in tuberculosis.

In two experiments on the value of iodine, DeWitt fed tuberculous guinea-pigs increasing amounts of iodine in daily doses of from 10 to 50 mg. The control pigs of one set lived 42, 135 and 147 days after inoculation, and all died of generalized tuberculosis. The treated pigs of the same set lived longer, the duration of life being 116, 137, 180, 196, 212, 379 and 459 days. All died with generalized tuberculosis, in some cases less marked than in the controls. In another set, more severely infected at the outset, the controls lived 45, 69, 84, 86, 86 and 117 days, all showing severe generalized tuberculosis, while the treated pigs lived about the same length of time; viz., 58, 77, 78, 91, 95 and 100 days. The degree of disease was about the same as in the controls. Her conclusion on the basis of her own and other investigations was that "experimental investigation of iodine as a chemotherapeutic agent has as yet given little proof of its value or encouragement for the hope that it may prove a real chemotherapeutic agent in tuberculosis."

Clinical observation, on the other hand, indicates an effect of iodine on tuberculous tissue. Opinion is divided as to whether this is favorable or unfavorable. Undoubtedly, much depends on the dosage employed, a fact that is probably responsible for the divergent opinions on the matter. More work is needed to reconcile clinical and experimental observations.—Ed.]

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

INHERITANCE OF DEAFNESS

To the Editor:—Has a normally developed and intelligent young man, the brother of three deaf mutes and three normal brothers and sisters, any moral right to become a father? The three mutes are going through college and will graduate.

M.D.

Answer.—A young man with normal hearing who has three deaf mute brothers is just as likely to have children born deaf as is one of these deaf brothers. A man with a prospect of this sort should consider carefully the question of having children. Even if he has a normal hearing child, the offspring of this child are likely to be deaf. The desire to have children is a normal instinct, but under circumstances of this sort it is a much better plan to adopt normal children rather than run the risk of propagating a defect which constitutes a serious handicap.

BLIND SPELLS AND HEADACHES FROM MIGRAINE

To the Editor:—Kindly give any and all information you may have on the cause of "blind spells" or the wavy scintillating subjective phenomena of the eyes, followed by headaches and frequently by vomiting. Gould many years ago attributed these spells to eyestrain, but this has never been accepted by the profession. Please give all information and cite literature.

M.D., California.

Answer.—From the rather sketchy description of the phenomenon, it may be assumed that the ocular prodromals of migraine are intended. Such ocular prodromals may assume the form of scintillating scotomas, of hemianopias, of tubular visual fields, of fogged or diminished vision, or even of complete temporary amaurosis or blindness. As a rule, the ocular prodromals last from three to fifteen minutes and then disappear completely, to be followed in from ten to thirty minutes by the migraine headache, with or without nausea and vomiting. There has never been recorded any permanent visual defect subsequent to the ocular prodromals of a migraine. The cause of this phenomenon seems to lie in a spasmodic contraction of the arteries of the retina, the location and extent of the contraction determining the character and extent of the phenomenon. In two cases seen during the prodromal attack, the retinal arteries and especially the macular arteries were contracted to mere threads. A complete discussion of the subject may be found in the American Encyclopedia of Ophthalmology (**10**:7694, 1917). Since that time, little has been added to the ophthalmic literature on that subject with the exception of a few single case reports.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

American Board for Ophthalmic Examinations. Colorado: Denver, Sept. 13. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology. Colorado: Denver, Sept. 13. Sec., Dr. H. W. Loeb, 1402 So. Grand Blvd., St. Louis, Mo.

Arizona: Phoenix, Oct. 5. Sec., Dr. W. O. Sweek, Phoenix.

Colorado: Denver, Oct. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Idaho: Boise, Oct. 5. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

Illinois: Chicago, Oct. 5-7. Supt., Regis. and Education, Mr. V. C. Michels, Springfield, Ill.

Minnesota: Minneapolis, Oct. 5-7. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

Montana: Helena, Oct. 5-7. Sec., Dr. S. A. Cooney, Helena.

New Hampshire: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.

New York: Albany, Buffalo, New York and Syracuse, Sept. 20-23. Chief, Professional Exams. Bureau, Mr. Herbert J. Hamilton, State Education Building, Albany.

Oklahoma: Oklahoma City, Sept. 14-15. Sec., Dr. J. M. Byrum, Shawnee.

Rhode Island: Providence, Oct. 7-8. Sec., Dr. B. U. Richards, Providence.

Utah: Salt Lake City, Oct. 5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

Wisconsin: Basic Science Board, Madison, Sept. 18. Sec., Dr. M. F. Guyer, University of Wisconsin, Madison.

Wyoming: Cheyenne, Oct. 4-6. Sec., Dr. G. M. Anderson, Cheyenne.

Minnesota April Examination

Dr. A. E. Comstock, secretary of the Minnesota Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, April 6-8, 1926. The examination covered 15 subjects and included 80 questions. An average of 75 per cent was required to pass. Thirty-one candidates were examined, all of whom passed. Nine candidates were licensed by reciprocity and 7 by endorsement of their credentials. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
Georgetown University School of Medicine	(1919)	90.2
University of Illinois College of Phys. and Surgs	(1925)*	87.2
University of Kansas School of Medicine	(1921)	87.9
University of Michigan Medical School	(1924)	89
University of Minnesota Medical School	(1925)	88.5, (1925)† 86.8, 89.9 (1926) 90, 90.3, (1926)† 87.5, 87.6, 87.7, 88, 88.4, 88.5, 89, 89, 89, 89.5, 89.9, 89.9, 90.3, 90.8, 91.4
Washington University School of Medicine	(1920)	88.9
University of Pennsylvania School of Medicine	(1924)	88.9
Vanderbilt University School of Medicine	(1924)	86.1
University of Manitoba Faculty of Medicine	(1917)	88.3
University of Munich, Germany	(1925)‡	90
University of Oslo, Norway	(1924)‡	88.6
Medico-Chirurgical Institute, Stockholm, Sweden	(1916)‡	80

LICENSED BY RECIPROCITY

College	Year Grad.	Reciprocity with
Cooper Medical College, San Francisco	(1905)	California
Northwestern University Medical School	(1914)	N. Dakota
Rush Medical College	(1915)	Iowa
University of Illinois College of Phys. and Surgs	(1925)	Illinois
University of Michigan Medical School	(1895)	Iowa
University of Minnesota Medical School	(1910)	N. Dakota
Creighton University College of Medicine	(1918)	Nebraska
University of Nebraska College of Medicine	(1925)	Nebraska
University of Texas Department of Medicine	(1923)	Texas

ENDORSEMENT OF CREDENTIALS

College	Year Grad.	Endorsement with
Rush Medical College	(1925, 2)	N. B. M. Ex.
University of Michigan Medical School	(1924)	N. B. M. Ex.
Cornell University Medical College	(1924)	N. B. M. Ex.
Jefferson Medical College of Philadelphia	(1917)	N. B. M. Ex.
University of Pennsylvania School of Medicine	(1924, 2)	N. B. M. Ex.

* This candidate has finished his medical course and will receive his M.D. degree on completion of a year's internship in a hospital.

† These candidates have finished their medical courses and received their M.B. degrees, and will receive their M.D. degrees on completion of a year's internship in a hospital.

‡ Verification of graduation in process.

Medical Economics

EVERY STATE IN THE REGISTRATION AREA BEFORE 1930*

It is a pertinent question as to just why the American Medical Association should be asked at this particular time to assist in completing the registration area for births and deaths. It is for the very sufficient reason of the material aid it has rendered in the past in developing the present registration area and because of its expressed belief in the value of vital statistics as the basis for medical and social research.

Lest we forget what has gone before, a glance over the recorded annals of this association will give us the inspiration to complete the task before us.

Twenty-three years ago—to be exact, in May, 1903—the Association passed resolutions:

> That the American Medical Association heartily commends the action of Congress in promoting the adoption of complete and uniform systems of registration of vital statistics in the United States and congratulates the American Public Health Association and the United States Census Office on their useful and effective cooperation for this purpose.
>
> That the American Medical Association strongly urges on the state medical societies that special committees be appointed to advocate and secure the passage of satisfactory registration laws in the states that do not at present possess them, that county societies support and aid in the execution of such laws as far as possible, and that physicians individually throughout the United States endeavor to promote the accuracy and value of mortality statistics by giving clear and definite statements of causes of death on certificates of death.

These resolutions followed very closely on the action of Congress in establishing the census office on a permanent in place of a decennial basis. The resolution of Congress referred to in the resolutions of the American Medical Association and which was approved by the President, Feb. 11, 1903, contained among others the following preamble:

> Whereas, The registration of births and deaths with information on certain points is essential to the progress of medical and sanitary science in preventing and restricting disease and in devising and applying remedial agencies, . . .

It is not inappropriate to note that we find prominent among those who urged these resolutions the names of Vaughan and McCormack, who will always be honored in the memories of all men; therefore, what the Association may do today becomes a reiteration of our belief and pledge made a generation ago. These expressed convictions have lost nothing but gained much in their significance with the passage of the years. This interval of time has not only marked a marvelous advancement in preventive medicine; it has also witnessed the adoption of vast plans for social welfare. The extension of our educational programs, of child labor laws, of mothers' pensions, of the treatment of juvenile delinquents, are just a few of the many activities of the government which today are a recognized basis of social welfare.

The single item of age on a birth certificate is the hinge on which hangs the wise administration of these functions. So, too, the massed information recorded on a million death certificates every year challenges alike the laboratory and every investigator in preventive research.

It is particularly fitting that this subject be again considered at this time for the reason that this meeting is held in the South, and the Southern states are the ones at present without adequate registration requirements—of the fifteen states outside the birth registration area, eleven are distinctly in the Southern group, and of the seven without adequate death registration, four are in the same group. It is not too much to say that the eyes of the United States are today focusing on this very area of our country as the land of marvelous opportunity.

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* Official communication from the Bureau of the Census.

The South has labored for many years under the widespread impression in the minds of the other people that life in that locality was short, uncomfortable and decidedly uncertain. But yellow fever has been conquered; malaria is being pushed to the background, and hookworm and indolence are passing out hand in hand. It only remains for the South to complete her renaissance and show to the world at large that, in addition to every gift of nature, she possesses every resource contributed by science.

There is no mystery about the details of registration, and all but three of our forty-eight states, in response to the appeal made years ago, have perfectly adequate laws for the accomplishment of registration. Therefore, the groundwork has been laid; but indifference on the part of those responsible for this registration, coupled with the inadequate appropriations or the hesitancy on the part of those responsible for the enforcement of the law to invoke its penalties, are the factors responsible for the existing conditions.

It need hardly be recalled that this function of birth and death registration is essentially a state function. Similar to many other powers, it is entirely a matter of state initiative and state performance. Our national government can advise and assist in a limited way those states without adequate registration, but it is only too anxious to enroll within its generous requirements every state that qualifies.

In order that it may be appreciated that birth and death registration is a matter of supreme concern to others than the people of individual states, attention may be called to the fact that at the last annual meeting of the American Public Health Association a special committee was created for the promotion of birth and death registration. The constituent membership of that committee is worthy of note. On it are represented the American Public Health Association, our largest insurance companies, the U. S. Public Health Service, the U. S. Children's Bureau, the National Tuberculosis Association, the U. S. Chamber of Commerce and the U. S. Bureau of the Census. This committee by authority may be enlarged by the chairman. The American Medical Association will make a notable addition.

The completion of the registration area needs the stimulus of the collective and individual support of all physicians—not a passive acquiesence but an active interest. When the feeling that the registration of births and deaths filters from this organization to every one of its constituent bodies, and through these to its individual membership, then the words "registration area" will disappear from our literature and we shall have substituted therefor "national registration."

U. S. Census Bureau.

Plan for Community Health Service.—If a community's conscience is sufficiently aroused by some emergency, such as a severe epidemic, and there is created a desire to provide itself with reasonably adequate health service, what procedure should be adopted? The first logical step would be to arrange for a comprehensive and detailed public health survey. Health is a business enterprise of first importance to any community. No business, either public or private, can hope to determine its assets and liabilities without a thorough inventory. The public health survey is the only practical means by which a community can discover its essential health problems, and, by careful interpretation, develop a sound policy and well balanced program suited to actual needs. No attempt should ever be made to reorganize or plan a community health program on general principles or by endeavoring to expand further or develop some special activity that may, for the moment, seem urgent or popular. The ultimate success of local health service depends chiefly on a sound basic policy and a well balanced program with adequate funds and trained and experienced personnel under competent centralized authority.—Cumming, Hugh: *Pub. Health Rep.* **41**:378 (Feb. 26) 1926.

Book Notices

PEDIATRICS. By Various Authors. Edited by Isaac A. Abt, Professor of Diseases of Children, Northwestern University Medical School, Chicago. Volume VIII and Index Volume. Cloth. Price, $10. Index volume gratis. Pp. 1102, with 388 illustrations. Philadelphia: W. B. Saunders Company, 1926.

The appearance of the eighth volume and the index of the Abt Pediatrics concludes the publication of a monumental contribution to this field. The volume under consideration is devoted largely to special topics. The section on diseases of the skin is edited by Dr. O. S. Ormsby, in association with other western dermatologists. This section comprises 267 pages, and constitutes a textbook in itself. It is furthermore fully illustrated, and should be of great value to pediatricians who are constantly consulted concerning eruptions of the skin of infants. Dr. George E. Shambaugh contributes the section on diseases of the ear in childhood, placing the most emphasis, naturally, on otitis media and mastoiditis. Every well informed pediatrician now realizes that many fevers, convulsions or other disorders of infancy are the result of middle ear infections. Dr. Casey A. Wood, now retired from practice and investigating the eyes of birds in Tibet, is responsible for the section on ocular diseases, which gives special attention to eye symptoms in infectious diseases, and to proper hygiene of the eye in education. One of the most instructive chapters is that on Hospitals for Infants and Children, by Dr. John M. Dodson and Richard E. Schmidt. This is illustrated with complete plans and photographs of some of the finest children's hospitals in the world, and takes into account the details of hospital management. Here again is a section that might well be made separate because of its unique character and practical value. The volume is concluded with sections on the medicolegal aspects of the care of infants, on tumors, on encephalitis and on animal parasites. As has been said previously, the arrangement of the system is somewhat illogical. This was occasioned perhaps by the difficulty of securing, editing and publishing material from such a widely distributed group of authorities. This lack of systematic arrangement is obviated to a large extent by a publication of an index of 250 pages, which, if properly used, makes references to any topic a relatively simple matter.

TABULAE BIOLOGICAE. *Herausgegeben von C. Oppenheimer and L.* Pincussen. Ed.: W. Junk. Band I. Reine und physiologische Physik, physikalische Chemie und biologische Anwendungen. *Paper. Price,* per set of four volumes, $24. Berlin: W. Junk, 1925.

This is the first volume of what will eventually be a four volume work, covering data in every field of biologic science. The entire book consists of tables selected from numerous sources. They make reference simple in that they assemble under one cover material that might otherwise have to be sought in numerous textbooks. The first volume is devoted largely to mathematics, physics and mechanics, but with many tables of primary medical interest; for example, one section on physical optics, one on the anatomy and physiology of the eye, one on the physiology of the countenance, one on body temperature, and one on anesthesia. Subsequent volumes will include tabulated data on all the aspects of chemistry and physiology, including the composition and food values of various substances, immunity, and the biology of plants and animals.

DISEASES OF THE NEW-BORN: A Monographic Handbook. By John A. Foote, M.D., *Professor of* Diseases of Children, Georgetown University Medical School. Cloth. Price, $5. Pp. 231, with 85 illustrations. Philadelphia: J. B. Lippincott Company, 1926.

It is well known that the period of greatest infant mortality is during the first two weeks of life. Only by the dissemination of knowledge among physicians concerning the care and treatment of the new-born as well as that of the mother during the prenatal months can there be any hope for a reduction of the death rate within this period. It is to meet this need that this collection of papers has been published. Most of the papers are written by the author, the others having been contributed by members of the faculty of the Georgetown University Medical School. The author points out that the volume is concerned only with the diagnosis and treatment of the disabilities most commonly seen in the new-born. Its scope is therefore somewhat limited. Bibliographic notes are appended to each chapter, and add to the value of the book. The papers are well illustrated, especially the one on diagnostic and therapeutic measures. The author might be criticized for illustrating the technic of superior longitudinal sinus injection in an infant without having shaved the hair about the area of injection. On the whole, the book will be found useful to many practitioners; but the student and those who wish more comprehensive data will be forced to turn to other sources.

Les médicaments cardiaques. Par le Docteur L. Cheinisse. Paper. Price, 14 francs. Pp. 179. Paris: Masson et Cie, 1925.

In this rather small volume the author has attempted an account of the known cardiac remedies, their mode of action, indications and contraindications, methods of administration and doses. As is inevitable when so much ground is to be covered, there is frequently a lack of sufficient detail. Digitalis and strophanthus are covered quite fully, as is due to their position of importance. More attention is paid to the crystalline form of digitalis than in American textbooks, and to strophanthus and ouabain. It is this difference in point of view here and elsewhere, whether agreed with or not, that makes the book of value to American and English readers. Many of the remedies described are little used, or have been discarded in this country. Caffeine receives little attention and the other purine-body diuretics none, in spite of their known pharmacologic value in heart disease. Comparatively little attention is paid to much recent literature of importance, either clinical or experimental. References to the literature are inadequate or absent. The volume has a certain amount of interest, but does not have the value to the clinician or the student which more thoroughness and a more catholic point of view would give it.

A Text-Book of Pathology. With a Final Section on *Post-Mortem* Examinations and the Methods of Preserving and Examining Diseased Tissues. By Francis Delafield, M.D., LL.D., and T. Mitchell Prudden, M.D., LL.D. Thirteenth edition. Revised by Francis Carter Wood, M.D., Director of the Pathological Department, St. Luke's Hospital, New York. Cloth. Price, $10. Pp. 1354, with 828 illustrations. New York: William Wood & Co, 1925.

The review of the tenth edition of this book (The Journal, Dec. 12, 1914) took up four lines. At that time it seemed unnecessary to review at length a book so well known. The present edition, according to Dr. Wood, who revised it, is modified but little. Fundamental conceptions of pathology have not changed much, and there have been few contributions to morphologic pathology. The new edition does contain new material, however, on the reticulo-endothelial system, on infectious diseases, on lung abscess and on jaundice. New references also have been added. Dr. Wood has selected for inclusion in the work only a little of the vast material in physiologic and chemical pathology, most of which as yet has not been digested and correlated.

Selected Articles on Birth Control. Compiled by Julia E. Johnsen Cloth. Price, $2.40 net. Pp. 369. New York: The H. W. Wilson Company, 1925.

This is one of the Wilson handbook series and is a valuable thesaurus of the subject. After an introductory note by the compiler, the first article is a brief on the proposition: Resolved, that the dissemination of the knowledge and means of contraception should be made legal. The brief is divided into three parts, with many subheadings under each part. The first part consists of general propositions which occupy only one page; then there is a tabulation of the affirmative arguments, which goes through eleven pages; then a tabulation of the negative arguments, which goes through twelve pages. This brief gives one a broad and illuminating perspective of the whole subject. Following this is a bibliography of birth control literature, occupying forty-seven pages. The bulk of the volume is taken up by recent articles on birth control. These, as the brief, are arranged systematically under three heads: first, the general discussion of birth control, in which are found twenty articles; second, an affirmative discussion including twenty articles; third, a negative discussion including nineteen articles. These are well selected and represent most recent views on the subject. The book is as complete a presentation as seems possible in a moderate space. The beginner who wants to study the pros and cons of birth control can hardly find a better introduction to it, and the cognoscenti will find it a valuable work that gives them the last word up to 1925.

A System of Clinical Medicine. Dealing with the Diagnosis, Prognosis, and Treatment of Disease for Students and Practitioners. By Thomas Dixon Savill, M.D. Seventh edition. Cloth. Price, $9. Pp. 1004, with 180 illustrations. New York: William Wood & Co., 1925.

The latest edition of this well known English work follows the plan originally adopted by its author. Disease is approached much as it must be approached at the bedside. The chapter on diseases of the heart and pericardium will serve as an example. In this section, following a sketch of the physiologic anatomy concerned, the real subject is taken up. Part A gives as the cardinal symptoms of heart disease in general, breathlessness, dropsy and cyanosis. To these, other symptoms are added, which, along with the three cardinal symptoms are briefly discussed. Part B deals with the physical examination, and special methods of investigation such as the use of the electrocardiograph. Data have thus been collected by which to arrive at a classification of the disease found, its diagnosis, prognosis and treatment, which are the subjects of part C. Agnes Savill signs the preface to the present edition, and credits a corps of able contributors with much of the necessary revision and rewriting. In the various editions, the attempt has been made to condense and excise so as to prevent the book's becoming cumbersome. Therefore, one does not expect completeness to be a striking feature of a work that combines so many different kinds of information as does this book.

The Secretion of the Urine. By Arthur R. Cushny, M.A., M.D., LL.D. Second edition. Cloth. Price, $5.50. Pp. 283, with 39 illustrations. New York: Longmans, Green & Co., Ltd., 1926.

This edition was completed and in press before the sudden death of its author, and it represents his final word on the problem of the physiology of the secretion of urine. It is an exhaustive statement of the evidence for and against the "modern theory," with an extensive bibliography, and as such is invaluable for investigators and others who wish to be fully informed as to the present state of knowledge in this difficult field in physiology. One might wish that the monograph had been allowed to end there, for the final brief chapter on nephritis and other renal disorders is too superficial to be of much value, and detracts somewhat from the standard of the rest of the work. The summary dismissal of the work of Ambard and his followers on page 263, for example, is unwarranted by the facts and might better have been omitted. Except for this inadequate chapter, there is little reference to the pathologic and clinical aspects of the problem of the secretion of urine.

Troubles des échanges nutritifs; physiologie-pathologie-thérapeutique. Volumes 1 and 2. Pr. Ch. Achard, Professur de clinique médicale a la Faculté de médecine de Paris. Paper. Price, 110 francs. Pp. 1220, with illustrations. Paris: Masson et Cie, 1926.

This is a monumental compilation of existing data on the physiology, pathology and therapy of diseases of metabolism. The author uses the phrase "diseases of metabolism" in its widest sense; for example, the question of achlorhydria and hyperchlorhydria are dealt with in the chapter on mineral metabolism. The author shows familiarity with the extensive literature in the field, both scientific and clinical, and important papers are cited as footnotes in the text. The presentation is clear and logical. It is also, on the whole, quite accurate and critical; in fact, as accurate and critical as one may reasonably expect, when the data of this immense field are being presented and evaluated by a single man. According to the author, preparation of the monograph was begun fourteen years ago; and the monograph bears internal evidence of conscientious labor. The section on diseases of mineral metabolism alone comprises 356 pages. In most cases the author does not attempt to state, as in fact no one can at present state with certainty, where metabolic disturbances are primary syndromes and where they are merely symptoms of a disturbance primarily of nonmetabolic character. It is a useful and valuable contribution to the medical sciences.

Modern Methods in the Diagnosis and Treatment of Heart Disease. By Francis Heatherley, M.B., B.S., F.R.C.S., Superintendent Heart Clinic, Manchester. Second edition. Cloth. Price, $3.75. Pp. 269. New York: William Wood & Co., 1926.

As noted in the review of the first edition, this book does ot deal with laboratory diagnosis. It is strictly clinical, nd the "modern methods" are not the methods of the laboratory but of thought and approach. Laboratory investigation and clinical observation have greatly clarified and simplified our knowledge of heart disease, and it is this modern view and its application to the daily work of the practitioner with which the volume deals. In this edition a chapter on blood pressure has been added characterized by the same sound sense that distinguishes the entire text. It is still to be regretted that there is not a section devoted to the influence of infection, not only in the etiology but also in the diagnosis, prognosis and treatment of heart disease. The author, in commenting on this omission in the introduction, states that his work among pensioners has given him too little opportunity for acquiring sufficient knowledge of the subject. He could be assured, however, that his readers would be very willing not only to have the benefit of his own knowledge of the subject, but the benefit of his sense of proportion in considering and reviewing the opinions of others. In an appendix is given the text of a leaflet used in the Manchester Heart Clinic for the instruction of those suffering from functional heart disorder, which should be helpful to the physician who has to deal with these cases. A list of books appended for reference could be improved by a critical revision resulting in a few omissions. Bridging the gap between the teaching of less than a generation ago and that of today, the volume is of especial value to the practicing physician. This value is increased by its clarity and by the perspective with which the subject is treated.

Experimental Pharmacology as a Basis for Therapeutics: A Text-Book for Students and Physicians. By Dr. Hans H. Meyer, Professor of Pharmacology, University of Vienna, and Dr. R. Gottlieb. Translated by Velyien E. Henderson, Professor of Pharmacology, University of Toronto. Second edition from the seventh revised German edition. Cloth. Price, $7. Pp. 656, with 89 illustrations. Philadelphia: J. B. Lippincott Company, 1926.

Since its original publication in 1910, this work has been recognized as a classic textbook in pharmacology. It is constructed with the human body and its functions primarily in mind, rather than various drug substances classified either by botanic groups or by chemical composition. It begins logically with the actions of drugs on nerve endings, and proceeds through the various systems of the body to final chapters on the pharmacology of inflammatory processes, specific actions on the causes of diseases, and the mode of action of drugs. The revision of the book has taken into account the 1926 U. S. Pharmacopeia and the 1914 British Pharmacopeia, which dosages are given in the discussions. The book is marred to some extent by the inclusion of quite a few Germanic expressions.

Radium: Its Therapeutic Uses in General Practice. By G. H. Varley, M.D. Cloth. Price, $1.75. Pp. 103. New York: Oxford University Press, 1926.

After a brief discussion of the physics of radium and its method of use, the author presents case reports indicating the results that may be achieved. The book is a suggestive work of much value to those who avail themselves frequently of the qualities of radium in the treatment of disease.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

Local Anesthesia in Otolaryngology and Rhinology. By James Joseph King, A.B., M.D., Assistant Surgeon in Otology, New York Eye and Ear Infirmary. With Supplement on the Toxic Effects of Local Anesthetics, containing the complete reports of the various committees of the American Medical Association made to the Therapeutic Research Committee of the Council on Pharmacy and Chemistry. Edited by Emil Mayer, M.D., Chairman, Research Committee on Local Anesthesia. Preface by Robert A. Hatcher, M.D., Professor of Pharmacology, Cornell Medical College. Cloth. Price, $5. Pp. 205, with 21 illustrations. New York: Paul B. Hoeber, Inc., 1926.

Most complete and up to date monograph available on use of local anesthetics in otolaryngology.

Psychological Medicine. A Manual on Mental Diseases for Practitioners and Students. By Sir Maurice Craig, C.B.E., M.A., M.D., and Thomas Beaton, O.B.E., M.D., M.R.C.P., Senior Assistant Physician and Physician to Out-Patients, Bethlem Royal Hospital. Fourth edition. Cloth. Price, $6. Pp. 437, with 25 illustrations. Philadelphia: P. Blakiston's Son & Company, 1926.

New and completely revised edition of standard British work.

Laboratory Outlines in Bacteriology and Immunology. By John F. Norton, Ph.D., Associate Professor of Bacteriology, The University of Chicago, and I. S. Falk, Ph.D., Assistant Professor of Bacteriology, The University of Chicago. Cloth. Price, $2. Pp. 114. Chicago: University of Chicago Press, 1926.

Guide for instructors and students outlining course followed at the University of Chicago.

The Mind of the Negro as Reflected in Letters Written During the Crisis, 1800-1860. Edited by Carter G. Woodson, Ph.D., Editor of the Journal of Negro History. Cloth. Price, $5 net. Pp. 672. Washington, D. C.: Association for the Study of Negro Life and History, Inc., 1926.

A selection of letters written by intellectual negroes during the Civil War period.

Clinical Pediatrics. By John Lovett Morse, A.M., M.D., Consulting Physician at the Children's, Infants' and Floating Hospitals, Boston. Cloth. Price, $9 net. Pp. 848, with 180 illustrations. Philadelphia: W. B. Saunders Company, 1926.

Well written, conservative presentation of practical pediatrics as taught and practiced in Boston.

La cystographie. Étude radiologique de la vessie normale et pathologique. Par H. Blanc et M. Negro, du Service Civiale (Hôpital Lariboisière, Paris). Préface de G. Marion. Paper. Price, $1.60. Pp. 189, with 108 illustrations. Paris: Masson & Cie, 1926.

Technic and atlas of appearances following radiologic study of the urinary bladder.

Politzer's Text-Book of the Diseases of the Ear. For Students and Practitioners. Revised by Milton J. Ballin, M.D., Ph.B., Attending Oto-Rhino-Laryngologist, Bronx Hospital, New York City. Sixth edition. Cloth. Price, $10. Pp. 776, with 302 illustrations. Philadelphia: Lea & Febiger, 1926.

A standard text slightly edited and revised.

Chemistry of Food and Nutrition. By Henry C. Sherman, Ph.D., Sc.D., Mitchill Professor of Chemistry, Columbia University. Third edition. Cloth. Price, $3.25. Pp. 636, with 20 illustrations. New York: The Macmillan Company, 1926.

Comprehensive and reliable guide to necessary fundamental knowledge of food substances.

A Epidemia da Febre Typhoide do Anno de 1924 na Cidade da Bahia. Pelo Dr. Genesio Pacheco. Paper. Pp. 69, with illustrations. Bahia, 1925.

Contribucion al Estudio de Nuestra Patologia: Tripanosomiasis Centro-Americana & Enfermedad Segovia-Peralta. Por Jose Ignacio Hernandez M. Paper. Pp. 112. San Salvador, 1925.

American Medical and Sanitary Relief in the Russian Famine, 1921-1923. By Henry Beeuwkes, M.D., Medical Director American Relief Administration, Russian Unit. American Relief Administration Bulletin, Series 2, No. 45. Paper. Pp. 128, with 101 illustrations. New York: American Relief Administration, 1926.

Biennial Report of the Louisiana State Board of Health to the Legislature of the State of Louisiana 1924-1925. Paper. Pp. 699. New Orleans, 1926.

Medicolegal

Charitable Hospital Held Liable for Burning of Patient

(Tribble v. Missionary Sisters of the Sacred Heart (Wash.), 242 Pac. R. 372)

The Supreme Court of Washington, in affirming a judgment in favor of the plaintiff, says that he, having been severely burned by an aluminum bottle of hot water while he was still under the influence of an anesthetic after having been operated on while a patient in a hospital conducted by the defendant, a corporation, sued the defendant, alleging negligence in its care of him and negligence in the selection and retention of the person assigned to take care of him. The hospital had what were called probationers, student nurses and graduate nurses. The plaintiff's testimony showed that about the time he regained consciousness a probationer discovered that the bottle of hot water had been left in the bed, and, on taking it out, exclaimed that she had forgotten to take it out. Later on, the same day, on observing the extent of the injuries caused by the bottle, she remarked that she would "get the devil for that." On the other hand, a student nurse testified that when the plaintiff was put in his bed she removed two bottles of hot water, but did not know another one had been left in the bed; did not know who put the bottles in the bed; that the probationer was not in the room when the plaintiff was taken back to it. Of course this dispute of fact as to who was the plaintiff's attendant was for the jury.

Though the point was strongly at issue in the pleadings and in the trial of the case, the court is disposed to the view, on consideration of all the proof, that the hospital was maintained and operated as a charitable institution. Merely because an institution receives or exacts compensation from those desiring its privileges to the extent of their ability to pay does not necessarily deprive the institution of its character as a charitable one. It is the settled rule in the state of Washington that a charitable institution is not liable for torts committed by its servants against a patron of the institution, in the absence of a showing that it failed to exercise reasonable care in the selection of the servant. Ordinary care in the selection of servants implies and demands that degree of diligence and precaution which the exigencies of the particular service reasonably require. Admitting the purpose and advisability of using one or more bottles of hot water to increase the lowered circulation of a patient due to an operation, it is nevertheless highly important that a bottle of hot water capable of doing harm should not be left in such a position in the bed that a patient may be injured by it. The situation requires more care if the patient is unconscious.

It was urged that the exclamations and admissions of the probationer were unworthy of belief, in view of the testimony of the student nurse; but the latter's own testimony showed that she was only a pupil nurse, and that she neglected also to remove the hot water bottle that caused the injury. The probationer did not testify, nor was her absence explained. These were all matters for the jury; so also as to the testimony of the officer of the defendant who employed the servants. She alone had charge of and performed that duty, and in the very nature of her testimony it was in many important particulars, if not generally, insusceptible of contradiction. She was, of course, an interested witness. The weight and credibility of such evidence is for the jury.

Procedure for Revocation of License and Review

(Grisso v. Board of Medical Examiners (Calif.), 242 Pac. R. 912)

The District Court of Appeal of California, first district, division 2, in affirming a judgment in favor of the defendant sustaining a demurrer to a petition for a writ of review, says that the petition alleged that the section of the state medical practice act under which the petitioner's license was revoked was unconstitutional; but the power of the board of medical examiners under this section has been repeatedly upheld. The petitioner also asserted that his action in filing with the county clerk of the county of Alameda a certificate provided for by section 2466 of the civil code of California that he was the sole owner of "Bohannon Cancer Institute," and was doing business under that name, did not constitute a violation of the state medical practice act. A similar contention was made in *Berry v. Alderson*, 59 Cal. App. 729, 211 Pac. 836, but the court sustained the action of the board in revoking the license.

One of the grounds of the demurrer was that the petition did not state facts sufficient to warrant the granting of the relief asked. Section 14 of the state medical practice act as amended makes provision for the revocation by the board of medical examiners of licenses to practice medicine, outlines the procedure on such revocation, and sets forth the causes for revocation. The facts appearing in the petition for a writ of review indicated that the board acted according to the provisions of the act, and that the petitioner was regularly brought before the board for trial. He was a physician and surgeon, licensed by the board, and over whom it had jurisdiction. A hearing was had, and evidence supporting the charge was adduced at the hearing. On the application for a writ of review, the inquiry of the court need go no further; its powers are limited.

The petition set forth that a partial hearing was had in July, 1923, at the city and county of San Francisco, but that the matter was continued to a subsequent meeting of the board at Sacramento, when and where the hearing was concluded. The petition was filed in the superior court in and for the city and county of San Francisco. Section 14 of the medical practice act, as amended, provides that the holder of any certificate which has been revoked by the board may appeal to the superior court of the state in the county or city and county in which such suspension or revocation was made. The defendant board contended that, as the license was revoked in Sacramento, the petitioner's only remedy was an appeal to the superior court there because of the foregoing provision. But the provision for appeal contained in the medical practice act is unconstitutional, and certiorari or writ of review is the proper remedy. Had the demurrer raised that question alone, it should have been overruled.

Prohibited Testimony After Death of Patient

(Watkins et al. v. Watkins et al. (Miss.), 106 So. R. 753)

The Supreme Court of Mississippi, division A, says that the contestant of an alleged will made in 1918 offered as a witness a physician to testify as to his knowledge of the mental condition of the testator, including such knowledge as the physician had acquired while treating the testator as his patient from 1918 up to the time of the latter's death. This testimony was offered on the theory that the contestant, as the sole heir at law of the deceased, and as the administratrix and personal representative of the deceased and the estate, could waive the privilege extended under the provision of the code that

> All communications made to a physician or surgeon by a patient under his charge or by one seeking professional advice are hereby declared to be privileged, and such physician or surgeon shall not be required to disclose the same in any legal proceeding, except at the instance of the patient.

The court below refused to permit the offered testimony to be introduced, and this court thinks that this question has been settled adversely to the contention of the contestant by prior decision of this court. Again, on the theory that the testimony of the physician would not have tended to tarnish the reputation or discredit the testator, but, on the contrary, would have been to his credit, the contestant sought to bring this testimony within the reservation or supposed qualification found in the language of the court in *McCaw et al. v. Turner et al.*, 126 Miss. 260, 88 So. 705, to the effect that the right to waive the privilege must be limited to the patient, unless the manifest reason and obvious purpose of the statute would be sacrificed by adhering to a literal interpretation of its language. However, in view of the later decisions of the court, it is doubtful whether any such qualification is now recognized; but, whatever may at that time have been in the always had albumin in demonstrable quantity in their urine. Glycosuria occurred in 4.3 per cent of all specimens examined, being present most frequently in the sixth, seventh and eighth months. The percentage of glucose met was rarely over 1.5 per cent, the highest being 4.7 per cent, occurring once. The incidence of indican was slightly greater than glucose, occurring in 11.1 per cent of all specimens examined, frequently in conjunction with glucose. There is practically no difference in the average blood pressure values in the primipara, as compared with the multipara.

Passive Hyperemia Treatment of Chronic Cervicitis.—Moench has used the suction treatment of the cervix on over two hundred women with very good results in most instances, and improvement in every case, with the exception of about six.

Mechanics of Birth Injuries.—Newman and Levy assert that a large number, estimated to be as high as 75 per cent, of birth injuries may be avoided. The published statistics which tend to show the lowering of the fetal mortality rate are said to be misleading, as this reduction is due to better prenatal care, which eliminates deaths from toxemia and other preventable causes. Birth injuries are still responsible for an appalling number of fetal deaths, and reduction along this line can come only from proper obstetric teaching and practice.

Ligation of Inferior Vena Cava.—Pfaff reports the case of a woman who had borne a large abdominal cyst for some years without great discomfort. Ten days before coming into the hospital, while carrying stove wood, she collided with a post, receiving a sharp blow directly over the tumor; she fell, in pain and shock; the tumor suddenly became larger and the abdominal wall very tense and sensitive. A laparotomy was performed, and a ruptured vena cava was found and ligated. Slight swelling in the legs and thighs was noticed after about ten days; this was somewhat more noticeable after the patient was up and about; the condition soon cleared up entirely, however, and she has had no trouble since. Pfaff has collected reports of thirty-seven cases in which the inferior vena cava was subjected to surgical intervention. Nearly all of these patients were injured during the course of abdominal nephrectomies. In nineteen cases, total ligation of the cava was done, with six deaths; in seven cases, lateral ligation, with two deaths; in five cases, suture of the wounded vessels, no deaths; in six cases, forcipressure to the wounded vessels, no deaths; in one case, packing to vessels, one death.

Urologic Department in Gynecologic Clinic.—Among 5,000 patients seen by Halsted and Wilens in a gynecologic clinic during a three year period, 162 were referred for urologic diagnosis or treatment or both, an incidence of 3.25 per cent. The colon bacillus was found in 36.3 per cent of the cases, the staphylococcus in 31.3 per cent and the streptococcus in 16.1 per cent. The authors urge that more attention be paid to the rôle of focal infections as a possible causative factor of infection in these cases.

American Journal of Pathology, Boston

2: 193-273 (May) 1926

*Valvular Diseases of Heart. B. J. Clawson, E. T. Bell and T. B. Hartzell, Minneapolis.—p. 193.
*Specific Lesions of Peripheral Blood Vessels in Rheumatism. W. C. Von Glahn and A. M. Pappenheimer, New York.—p. 235.
*Case of Adiposis Dolorosa: Necropsy. N. C. Foot, R. W. Good and M. C. Mènard, Cincinnati.—p. 251.
*Histopathology of Subcutaneous Lesions in Tularemia in Man. H. H. Permar and G. C. Weil, Pittsburgh.—p. 263.

Valvular Diseases of Heart.—The development of old valvular defects was traced by Clawson, Bell and Hartzell in 280 cases of valvular heart disease, not including those of syphilitic origin. There were eighteen cases each of acute and chronic rheumatic endocarditis; thirteen cases of primary bacterial endocarditis; twenty-seven cases of secondary acute bacterial endocarditis; seventy-four cases of subacute bacterial endocarditis and 130 cases of old valvular defects. Space forbids a more detailed abstract of the pathologic examinations in these cases.

Specific Lesions of Peripheral Blood Vessels in Rheumatism.—In a series of forty-seven consecutive cases of rheumatic cardiac disease examined by Von Glahn and Pappenheimer, specific lesions of the small peripheral arterioles and capillaries, either systemic or pulmonary, have been found in ten. These lesions are characterized by the exudation of fibrin into and about the vessel wall, by a distinctive cellular reaction in the adjacent tissue and by the absence of thrombosis. These acute lesions are followed by organization with or without formation of new collateral channels within the thickened intima and occasionally within the muscular layer.

Pathology of Adiposis Dolorosa.—In the case reported by Foot, Good and Mènard, the pituitary body was apparently at fault, as in most cases that have come to necropsy. The changes in the other endocrine glands seemed to follow as a result of this. There was sclerosis of the thyroid, persistence of thymic tissue which, in a patient of 60, could be explained on a basis of overstimulation by the hypophysis.

Structure of Subcutaneous Lesion in Tularemia.—The histopathology of the subcutaneous lesion in a case of human tularemia is described in detail by Permar and Weil. The lesion presented the microscopic characteristics of a granuloma. The tissue reaction is summarized as follows: (*a*) primary massing of endothelial cells with giant cell formation; (*b*) endothelial hyperplasia with obliteration of capillaries; (*c*) necrosis with polymorphonuclear leukocytic infiltration and liquefaction; (*d*) development of small secondary lesions which pass through the same stages and tend to fuse with the primary one; and (*e*) delayed healing by organization.

Annals of Medical History, New York

8: 95-211 (June) 1926

Life and Time of Adolf Kussmaul. T. H. Bast, Madison, Wis.—p. 95.
Medical Numismatics. F. H. Garrison, Washington, D. C.—p. 128.
Samuel D. Gross. J. H. Gibbon, Philadelphia.—p. 136.
Pioneer Medicine in Western Pennsylvania. I. T. Diller, Pittsburgh.—p. 141.
Old Medical Journals. W. B. Howell, Montreal.—p. 155.
Galen's Discovery and Promulgation of Function of Recurrent Laryngeal Nerve. J. Walsh, Philadelphia.—p. 176.
Fragments of Chinese Medical History. K. K. Chen and A. S. H. Ling, Peking.—p. 185.
China's Contribution to Medicine in Past. W. C. Min, Hangchow, China.—p. 192.

Archives of Otolaryngology, Chicago

3: 481-574 (June) 1926

*Chemotherapy and Serum Therapy of Pneumococcus and Streptococcus Meningitis. I. J. A. Kolmer, Philadelphia.—p. 481.
Some Phases of Streptococcic Infection in Acute Mastoiditis. R. McKinney, Memphis, Tenn.—p. 514.
*Postdiphtheritic Stenosis of Larynx. H. B. Orton, Newark, N. J.—p. 521.
Improved Endoscope for Closing Safety-Pins. A. J. Shekter, Jamaica, N. Y.—p. 534.
Chronic Progressive Deafness Including Otosclerosis and Pathology of Inner Ear. J. K. M. Dickie, Ottawa, Ont.—p. 538.

Treatment of Septic Meningitis.—Kolmer summarizes his experimental work as follows: Polyvalent antistreptococcus serum administered by intramuscular, intravenous, intracisternal and intraventricular injection has failed to influence appreciably the cause and mortality of experimental hemolytic streptococcus meningitis of dogs. Type I antipneumococcus serum administered by intramuscular, intravenous, intracisternal and intraventricular injection has failed to influence appreciably the course and mortality of experimental type I pneumococcus meningitis of dogs. The intravenous, intraventricular and intracisternal injection of antipneumococcus antibody solution has exerted a slight degree of curative activity in the treatment of pneumococcus meningitis. Lavage of one or both of the lateral ventricles to the cisterna magna has proved effective in the treatment of severe experimental streptococcus and pneumococcus meningitis of dogs. This may be combined with the administration of antibody solution by subthecal injection in the treatment of pneumococcus meningitis, or by the injection of gentian violet in the treatment of streptococcus meningitis.

Postdiphtheritic Stenosis of Larynx.—Twenty-five cases of postdiphtheritic stenosis of the larynx are reported by Orton, of which seventeen patients were decannulated and cured. Three are still under treatment. Five patients died from causes not connected with the treatment. Because of the long time necessary for treatment of these patients before they can be decannulized, Orton urges early tracheotomy in diphtheria rather than to await the uncertain procedures of continued intubation. Before any attempt was made to decannulate these patients, infected tonsils were removed.

Archives of Pathology and Laboratory Medicine, Chicago

1: 847-994 (June) 1926

*Bactericidal Action of Pleural Exudates. VII. Streptococcus Infection and Immunity. F. P. Gay and A. R. Clark, New York.—p. 847.
*Histologic Basis for Local Resistance and Immunity to Streptococcus. VIII. F. P. Gay, A. R. Clark and R. W. Linton, New York.—p. 857.
*Histologic Changes Following Administration of Iodine in Exophthalmic Goiter. A. S. Giordano, South Bend, Ind.—p. 881.
*Symmetrical Cortical Necrosis of Kidneys in Pregnancy. W. J. Carson and R. Rockwood, Baltimore.—p. 889.
Mitotic Figures in Malignant Tumors as Affected by Time Before Fixation of Tissues. N. Evans, Loma Linda, Calif.—p. 894.
*Malignant Angiomas: Sarcoma Due to Roentgen Ray. S. F. Livingston and P. Klemperer, New York.—p. 899.
Experimental Focal Embolic Glomerulonephritis in Rabbits. B. J. Clawson, Minneapolis.—p. 911.
New Method of Mounting Fixed Frozen Sections. L. D. Campbell, Loma Linda, Calif.—p. 916.
Experimental Infection Immunization Against Tuberculosis. E. R. Long, Chicago.—p. 918.

Bactericidal Action of Pleural Exudates.—In this study made by Gay and Clark are described the streptococcidal properties of pleural exudates from rabbits purposely varied to include relatively different proportions of polymorphonuclear cells and mononuclear cells (clasmatocytes). The presence of the mononuclear exudate in the pleural cavity is coincident with protection of the animal. Neither of these exudates is in its entirety bactericidal outside the animal body. The simple transfer of such an exudate to a normal animal also fails to protect the second animal. Experiments in vitro, then, with these exudates, do not explain conditions as they exist in the body. Although whole exudates of both cell types are not destructive to the streptococcus, they do destroy some other organisms. Furthermore, the supernatant fluid of either exudate will destroy the streptococcus. The cells themselves from either exudate may slowly destroy the streptococcus, and an acid extract of either type of cell destroys the streptococcus readily. The streptococcidal property of fractions of exudates is thermostabile, whereas the corresponding property for some other bacteria is thermolabile.

Histologic Basis for Local Resistance and Immunity to Streptococcus.—This paper is supplementary to the preceding one. The authors describe the histologic changes that take place in the pleura of rabbits as the result of the injection of sterile aleuronat of gum arabic broth mixtures. An acute inflammatory pleura is invaded and destroyed by virulent streptococci injected into the pleural cavity, whereas the same organisms disappear rapidly from the pleural cavity of animals with granulating and thickened pleural walls and are found enveloped within clasmatocytes in a relatively undisturbed tissue. Phagocytosis of streptococci in both the exudate and tissues is almost exclusively by mononuclear cells. The pleural wall may be thickened still further by repeating the injection of the nonspecific substances or by injecting living streptococci. The degree of protection would seem roughly commensurate with the depth of granulation tissue that has been produced. The authors are unable to say whether specific immunity is produced by nonspecific and sterile irritating agents possessing some specific factor; in other words, whether all grades of local streptococcus protection are dependent simply on the number of clasmatocytes present. Preliminary experiments show that when one pleural cavity is treated sufficiently, the other cavity, although showing no histologic change in the pleural wall at the time of infection, is nevertheless protected. This protection is accompanied by mobilization of clasmatocytes in the pleural wall in an unusual fashion; there is further indication that the wall of the treated cavity is coincidently stripped of its cells.

Histologic Changes in Thyroid Following Iodine Administration.—Giordano found evidence that in most instances involution changes in the thyroid occur when iodine is administered to patients with exophthalmic goiter, and that, in general, the degree of involution of the thyroid parenchyma closely parallels the clinical course. The changes are similar in character to those described following ligation of the thyroid vessels, but they occur rather uniformly throughout the gland. They have also been observed in patients who came to operation during a period of remission of the clinical symptoms without any therapy other than rest.

Symmetrical Necrosis of Kidneys in Pregnancy.—Typical symmetrical necrosis of the kidneys is apparently invariably associated with pregnancy. Fourteen cases have been recorded. Carson and Rockwood report one case. The necrosis is due to thrombosis of the interlobular arteries, their afferent branches and glomerular capillaries. It is the opinion of Carson and Rockwood that in cases of this type there is an acute glomerular nephritis with an injury to the vascular endothelium from a toxin circulating in the blood stream, followed by the formation of thrombi composed of blood platelets and fibrin.

Recurrent Naevi Vasculosi.—A case of recurrent naevi vasculosi is reported by Livingston and Klemperer. The histologic examination revealed features highly suggestive of an angioblastic sarcoma. The microscopic picture revealed definite evidence of a pathogenetic relationship between the atypical vascular proliferation and the previous roentgen-ray treatment. A case of a malignant angioma with apparently benign histologic features is also reported. The histologic examination revealed unripe mesenchymal tissue as a constituent of the tumor, which explains the malignant nature of this type of neoplasm.

Arkansas Medical Society Journal, Little Rock

22: 255-265 (May) 1926

Arkansas Tuberculosis Association. E. Chambers, Little Rock.—p. 255.

Atlantic Medical Journal, Harrisburg, Pa.

29: 587-670 (June) 1926

Hematuria. H. H. Young, Baltimore.—p. 587.
*Psychic, Nervous and Mechanical Factors in Digestive Disorders of Childhood. J. P. Scott, Philadelphia.—p. 590.
Pyloric Stenosis in Infants. H. P. Brown, Jr., Philadelphia.—p. 596.
Acute Intussusception in Infants. R. M. Entwisle, Pittsburgh.—p. 599.
*Empyema in Children. E. G. Alexander and R. L. Sherk, Philadelphia.—p. 602.
Etiology and Pathology of Aural Disease. F. J. Bishop, Scranton, Pa.—p. 607.
Symptomatology in Diseases. E. A. Curtin, Scranton, Pa.—p. 608.
Treatment of Aural Diseases. E. U. Buckman, Wilkes-Barre, Pa.—p. 611.
Increasing Importance of Chemistry in Internal Medicine. J. H. Austin, Philadelphia.—p. 612.
Relation of Chlorides of Body to Disease of Gastro-Intestinal Tract. E. Rose, Philadelphia.—p. 613.
Elimination of Carbon Monoxide from Blood. W. C. Stadie, Philadelphia.—p. 616.
Infant Feeding. J. H. McKee, Philadelphia.—p. 618.
Midwife Work in Pennsylvania. M. R. Noble, Harrisburg.—p. 625.
Bronchial Asthma and Hay-Fever. R. A. Kern, Philadelphia.—p. 628.

Digestive Disorders of Children.—In the correction of disorders of digestion in the child, Scott says close attention must be paid to details of management and environment. Explicitness of instruction and careful questioning of the parent will often bring success in difficult cases. Particular stress must be laid on the development of good habits and the breaking of harmful ones in their incipiency. Mental, calm and domestic happiness often restore normal function.

Empyema in Children.—Of 256 cases of empyema analyzed by Alexander and Sherk, 31.8 per cent occurred in children under 12 years of age. The mortality was 17 per cent. As a complication of the communicable diseases, empyema was observed only seven times in 12,290 cases. It occurs most frequently in scarlet fever cases. However, when present, its mortality rate is high (50 per cent).

Florida Medical Association Journal, Jacksonville

12: 285-313 (May) 1926

Proceedings of Florida Medical Association, 1926.—p. 288.

Journal of Infectious Diseases, Chicago

38: 469-552 (June) 1926

*Mercurochrome as Biliary Antiseptic. IX. Experimental Typhoid-Paratyphoid Carriers. K. F. Meyer, H. Sommer and B. Eddie, San Francisco.—p. 469.
*Chronic Periapical Dental Infection. R. L. Haden, Kansas City, Mo.—p. 486.
*Mucous Membrane Immunity to Pneumococci in Rabbits. M. L. Cooper, Cincinnati.—p. 491.
Anthrax Immunity. II. Immunization of Sheep by Means of Anthrax Bacilli Attenuated with Sodium Chloride. S. J. Schilling, Fayetteville, Ark.—p. 499.
Cellobiose Fermentation by Coli-Aerogenes Group. S. A. Koser, Urbana, Ill.—p. 506.
Increasing Virulence of Clostridium Chauvoei by Ferric Salts. J. P. Scott, Manhattan, Kan.—p. 511.
*Incidence of Pneumococcus Types in Pneumonias of Children. R. E. Westlund, Chicago.—p. 514.
*Removal of Acidfastness from Tubercle Bacilli by Oleic Acid or Olive Oil. F. A. McJunkin, St. Louis.—p. 520.
*Tuberculous Infection in Guinea-Pigs Treated with Tubercle Bacilli Made Nonacidfast by Incubation with Olive Oil. F. A. McJunkin, St. Louis.—p. 524.
*Skin Reaction in Poliomyelitis. E. C. Rosenow, Rochester, Minn.—p. 529.
*Poliomyelitis Precipitin Reaction. E. C. Rosenow, Rochester, Minn.—p. 532.
*Tularemia in Wild Rats. L. V. Dieter and B. Rhodes, Los Angeles.—p. 541.

Failure of Mercurochrome as Biliary Antiseptic.—The experimental evidence adduced by Meyer, Sommer and Eddie is summarized as follows: Mercurochrome-220 soluble, intravenously injected, is excreted in the hepatic bile of rabbits in concentrations which may destroy 10,000,000 typhoid bacilli in from six to twenty-four hours. However, it has been impossible to cure experimentally produced gallbladder carriers by giving mercurochrome intravenously or by mouth. The colorimetric methods used in the estimation of mercurochrome and the influence of proteins on the germicidal properties of the compound are discussed.

Bacteria of Periapical Tooth Infections.—The results of periapical cultures from 1,500 incisor, cuspid and bicuspid teeth are reported by Haden. Four and eight-tenths per cent of the vital group, 62.8 per cent of the pulpless teeth with positive roentgenograms and 46.2 per cent of the pulpless teeth with negative roentgenograms showed ten or more colonies per tube. The nonhemolytic streptococcus was by far the most commonly found organism. Hemolytic streptococci occurred only rarely. The most common types of streptococci as determined by carbohydrate fermentation are *S. fecalis*, *S. mitis* and *S. salivarius*.

Mucous Membrane Immunity to Pneumococci.—Evidence is advanced by Cooper showing that it is comparatively easy to stimulate the production of generalized immunity to the pneumococcus, type 1, in the rabbit by introducing a killed pneumococcus vaccine immediately beneath the mucosa of the cheek. A surprisingly small amount of vaccine is necessary for immunization, 1 minim on each of ten successive days being sufficient. At the present time, this immunity has persisted for four months. All attempts to immunize subcutaneously and intradermally by injecting 1 minim on ten successive days, by instillation of 1 minim into the eye, or by swabbing the nose and mouth have failed to result in any protective immunity.

Pneumococcus Types in Pneumonia in Children.—In a series of sixty-nine cases of lobar pneumonia and thirty-four cases of bronchopneumonia occurring in children between the ages of 3 weeks and 11 years, pneumococci were obtained by Westlund by nasopharyngeal swabbing in 60.8 per cent of the cases of lobar pneumonia and in 52.6 per cent of the cases of bronchopneumonia. The relative incidence of pneumococcus types in these two groups of cases was much the same, group 4 predominating, type 2 coming next in frequency, type 1 third, and type 3 being least frequent. The fixed types of pneumococcus are less frequent in the pneumonias of children than in those of adults. The association of group 4 with representatives of one or another of the fixed types was demonstrated in several instances. In a group of thirteen cases of nonpneumonic respiratory disease in children, pneumococci were present in 92 per cent. No examples of types 1 and 3 were encountered, type 2 and group 4 forming one third and two thirds, respectively, of the isolated pneumococci. In forty-eight nonrespiratory diseases in children, pneumococci were found in 58 per cent. Type 1 was not represented in this group; type 2 formed 14.2 per cent, type 3, 3.6 per cent, and group 4, 82.1 per cent. The occurrence of type 2 pneumococci in the throats of these children in the hospital wards may have been due to contact.

Removal of Acidfastness from Tubercle Bacilli.—McJunkin asserts that cultures of tubercle bacilli dehydrated with acetone or alcohol lose their acidfastness on incubation with oleic acid. Cultures dehydrated with acetone lose acidfastness on incubation with olive oil, but those dehydrated with alcohol do not. The loss of acidfastness is incomplete in either case with less than 1 per cent of the bacilli retaining their property of staining red by the Ziehl-Neelson method. The new bacilli that remain acidfast are thought to be dead at the time of incubation.

Infection of Guinea-Pigs with Nonacidfast Tubercle Bacilli.—The results obtained by treating guinea-pigs with nonacidfast cultures of tubercle bacilli before and after inoculating them with living tubercle bacilli are reported by McJunkin. Tuberculous infection of guinea-pigs produced by inoculation with virulent tubercle bacilli (Saranac Laboratory H 60) is not influenced by injections of saline suspensions of cultures of the same strain of bacilli made nonacidfast by dehydration and incubation with olive oil. The results are the same whether the injection of nonacidfast suspensions precedes or follows the inoculation. Mixtures of nonacidfast tubercle bacilli of a lesser virulence (Saranac Laboratory H 37) and the olive oil in which they were incubated were injected into several series of guinea-pigs before inoculation with living cultures of the same strain of organism. The animals treated with the oil-bacillus suspensions became tuberculous on incubation, and there was no material difference in the progress of the infection in the treated guinea-pigs and untreated ones of the same age and weight.

Skin Reaction in Poliomyelitis.—Rosenow has found that freshly isolated strains of the pleomorphic streptococcus, which produced flaccid paralysis in rabbits, when grown from eighteen to twenty-four hours in pancreatic digest heart muscle broth to which one part in ten of ascites fluid was added, and the culture killed with phenol, 0.5 per cent, or tricresol, 0.3 per cent, yield a useful toxic antigen. One tenth cc. of a 1:100 dilution of this killed culture in sodium chloride solution, injected intradermally, results in no reaction or only slight redness in persons who have recovered from poliomyelitis, but redness is often marked if persons have not had poliomyelitis. The maximal reaction develops in from eighteen to twenty-four hours, after which it gradually subsides. Slight induration and redness limited to the area injected may last for several days. Absence of redness at the point of injection of the test substance at the end of eighteen to twenty-four hours is considered negative. The control injection consists of a dilution of 1:100 of the corresponding uninoculated broth.

Poliomyelitis Precipitin Reaction.—The results of the precipitin reaction with immune horse serums and extracts of nasopharyngeal swabbings in community and institutional outbreaks of poliomyelitis, Rosenow says, proved positive in nearly all frank and abortive cases at the time of the attack, in a high percentage of normal contacts and in persons not exposed to the disease at the time when cases occurred. It proved negative in nearly all of the cases in from two to three weeks after the acute attack had subsided and in normal persons soon after the epidemic had disappeared. In one epidemic, the incidence of positive reactions generally was found low shortly before the occurrence of the first case, high during the period of the epidemic and again low after the epidemic had subsided. The increase in positive reactions as cases of poliomyelitis developed and the decrease as poliomyelitis disappeared occurred rapidly and seemingly independently of exposure to the disease, in isolated households in the country as well as in the urban populations. Persons who were negative to the precipitin reaction on entrance into the epidemic zone soon became positive and reactions resembling abortive attacks of poliomyelitis were common in children. The number of positive reactions in persons who came to the Mayo Clinic from widely separated communities was relatively high during the latter part of August when poliomyelitis was generally prevalent and much lower during the latter part of October after poliomyelitis had largely disappeared. After the epidemic in Rochester had subsided and the precipitin reaction in the population had become largely negative, cases occurred south of Rochester where the number of a positive precipitin reaction was high. In certain instances, poliomyelitis occurred without exposure within from five to twelve days after the presence of the streptococcus was demonstrated in the throat. Repeated swabbings showed that the carrier state lasts usually from one to three weeks in normal persons. Immunity to poliomyelitis and the occurrence of the organism in the throat did not run parallel. The positive reactions during epidemics in adults, who are relatively immune, and in children, who are relatively susceptible, were found nearly equally high, and persons who had had poliomyelitis became carriers of the streptococcus during epidemics *quite like persons who had* not had the disease.

Tularemia in Wild Rats.—The existence of latent *B. tularense* infections in wild rats has been established by Dieter and Rhodes by inoculation experiments, by cultures on egg yolk medium and by agglutination tests. The lesions in the naturally infected rats are not characteristic, and the nature of the infection can only be established by inoculations of guinea-pigs.

Missouri State Medical Association Journal, St. Louis

23: 121-164 (April) 1926

Fraudulent Medical Diplomas. F. C. Waite, Cleveland.—p. 121.
Pyloric Stenosis in Infancy: Three Cases. C. A. W. Zimmermann, Cape Girardeau.—p. 131.
*Abscess of Pancreas. A. S. Welch, Kansas City.—p. 135.
*Primary Carcinoma of Liver. E. Schlisler and J. C. Morfit, St. Louis.—p. 137.
*Alleged Symptomatic Cure of Pernicious Anemia. M. Pitzman, St. Louis.—p. 138.
*Common Warts of Mouth. W. D. Davis, St. Louis.—p. 144.

Abscess of Pancreas.—Welch says that abscess of the pancreas should be considered in the differential diagnosis of upper abdominal lesions. The condition is operable and can be cured. The diagnosis of solitary pancreatic abscess is based on the signs and symptoms of suppuration, and on signs and symptoms localized to the pancreas. The chills, sweats, hectic fever and leukocytosis are characteristic of suppuration. That the pancreas is the seat of the lesion is indicated by midepigastric tenderness to deep pressure and an enlarging tumor mass between the stomach and transverse colon. Occasionally, abscess in the tail of the pancreas may be confused with left perinephritic abscess.

Primary Carcinoma of Liver.—The tentative diagnosis in the case reported by Schlisler and Morfit was hyperstatic pneumonia (postinfluenzal), myocarditis with valvular disease, hypertrophied prostate, arteriosclerosis, pleurisy, liver hypertrophy and gallbladder disease. At the necropsy a primary adenocarcinoma of the liver was found with no metastases elsewhere.

Hydrochloric Acid Treatment of Pernicious Anemia.—The hydrochloric acid treatment of pernicious anemia is discussed further by Pitzman, and thirteen cases are reviewed. The maximum amount of dilute hydrochloric acid taken after meals without discomfort at a single dose in half a glass of water was 30 drops, the minimum, 15 drops, but these doses could be repeated at half hour intervals for from three to five doses after each meal without any complaint, depending on the size and character of the meal. This relatively intensive acid treatment immediately improved the digestion of all nonmoribund patients in this series, and progressively improved the blood picture and all other minor signs and symptoms. Both clinical and postmortem evidence is presented to sustain the author's a priori conception that arsenicals are not only not necessary in pernicious anemia but also, as used in practice, actually injure the patient's prospects. A modified acid treatment is suggested in certain gastro-intestinal disturbances and in typical pseudopernicious anemia cases.

Warts of Tongue.—Of the two cases presented by Davis, one was a single verruca of the tongue; the other patient had an enormous number of verrucae in the mouth.

Oklahoma State Medical Association Journal, Muskogee

19: 112-139 (May) 1926

Laryngotracheobronchial Endoscopy. A. L. Guthrie, Oklahoma City.—p. 112.
Ectopic Pregnancy: Eighteen Cases. S. F. Wildman, El Reno.—p. 117.
Thyroidectomy. A. L. Blesh, Oklahoma City.—p. 119.
Injuries of Spine. S. R. Cunningham, Oklahoma City.—p. 124.
Abdominal Hemorrhage: Laparotomy; Recovery. A. G. Cowles, Ardmore.—p. 127.

Philippine Journal of Science, Manila

30: 1-152 (May) 1926

Serologic Grouping of B. Dysenteriae Based on Quality of Antigen and Normal Agglutinins. O. Schöbl and R. Villaamil, Manila.—p. 1.
*Serology of Leprosy. I. Wassermann Reaction. E. V. Pineda and E. *Roxas-Pineda, Culion, P. I.—p. 39.*
*Id. II. Nitric Acid Precipitation (Bruck, Modified). H. W. Wade, Culion, P. I.—p. 59.
Nature and Availability of Plant-Food Constituents of Philippine Guano. M. Tirona, Manila.—p. 69.
Additions to Our Knowledge of Bornean Flora. II. E. D. Merrill, Berkeley, Calif.—p. 79.
Revision of Philippine Species of Gleneini (Coleoptera, Longicornia). C. Aurivillius, Stockholm.—p. 89.
Philippine and Malayan Ploiariinae (Hemiptera, Reduviidae). W. L. McAtee and J. R. Malloch, Washington, D. C.—p. 117.

Wassermann Test in Leprosy.—Six hundred and fifty lepers were tested by Pineda and Roxas-Pineda by means of the Wassermann test. The reaction was negative in uncomplicated cases of leprosy in its ordinary phase. They assert that when the Wassermann reaction is clearly positive in cases of ordinary leprosy it has the same significance as in nonlepers. In a certain proportion of cases of lepra reaction without evidence or presumption of treponematous complication, weakly positive reactions are obtained. That such reactions are due to the same substance that is demonstrated in syphilis and yaws is believed highly improbable.

Nitric Acid Reaction in Leprosy.—Results with the nitric acid reaction of Bruck in leprosy are reported by Wade. Of one hundred leper serums tested none was negative. Antileprosy treatment apparently reduces the degree of reaction, it being very strong in a much smaller proportion (7 per cent) of the patients who have been under treatment than in those with new untreated cases (44 per cent). Of a group of sixteen nonlepers, only three gave negative reactions, these among the professional staff, while two (laborers) were strongly positive. This reaction is said to be of no value in the diagnosis of a particular disease; it does not depend on the presence of syphilis (or yaws) alone, and does not have the significance of the Wassermann reaction.

Public Health Journal, Toronto

17: 271-320 (June) 1926

Canadian Public Health Association. G. D. Porter, Toronto.—p. 271.
Canadian Social Hygiene Council. J. Riddell.—p. 277.
Accident Prevention. R. B. Morley.—p. 285.
Infections of Pharynx. E. Boyd, Toronto.—p. 290.
Milk Problems in Canada. M. M. Seymour, Regina, Sask.—p. 295.

Rhode Island Medical Journal, Providence

9: 83-100 (June) 1926

Treatment of Certain Suppurative Conditions of Lung. W. Whittemore, Boston.—p. 83.
Care of Diabetics at Rhode Island Hospital Since 1910. A. M. Burgess, L. I. Kramer, M. J. Carpenter and H. S. Munro, Providence.—p. 90.

Surgery, Gynecology and Obstetrics, Chicago

42: 729-860 (June) 1926

Sympathectomy in Raynaud's Disease, Erythromelalgia and Other Vascular Diseases of Extremities. L. Davis and A. B. Kanavel, Chicago.—p. 729.
Peroral Endoscopy, Esophagoscopy and Bronchoscopy. G. Tucker, Philadelphia.—p. 743.
*Diabetic and Arteriosclerotic Gangrene of Lower Extremities. E. L. Eliason and V. W. M. Wright, Philadelphia.—p. 753.
*Subacute Ileocolic Intussusception Secondary to Carcinoma of Ileum. J. G. Probstein and M. G. Seelig, St. Louis.—p. 769.

*Branchial Fistula—Relation to Irritation of Vagus. L. Carp, New York. —p. 772.
Effect of Variation of Hydrogen-Ion Concentration on Motility of Human Spermatozoa. M. Muschat, Philadelphia.—p. 778.
*Cholecystitis and Cholelithiasis. S. H. Mentzer, Rochester, Minn.—p. 782.
*Proliferative Gingivitis of Pregnancy. S. Monash, New York.—p. 794.
*Torula Infection in Man: Case. J. L. McGehee and I. D. Michelson, Memphis, Tenn.—p. 803.
*Surgery on Tuberculous Patient. F. W. Griffith, Asheville, N. C.—p. 809.
Rat Bite Fever: Case. W. E. Hennerich, St. Louis.—p. 813.
Cesarean Section: Analysis of One Hundred and Seventy Cases. H. F. Lewis, Chicago.—p. 815.
Surgical Treatment of Abscess of Liver. U. Valdes, Mexico City.—p. 822.
Cholecystogastrostomy. W. Walters, Rochester, Minn.—p. 825.
Technic of Suspension of Uterus. I. Abell, Louisville, Ky.—p. 828.
*Technic of Hysterectomy. F. G. DuBose, Selma, Ala.—p. 832.
Improved Operation for Congenital Deep Culdesac. L. Glassman, Chicago.—p. 837.
*Bloodless Operation for Anorectal Prolapse in Children. C. L. Heald, Cedar Rapids, Iowa.—p. 840.
Skeletal Traction Clamp Permitting Full Extension of Extremity. J. A. Key, St. Louis.—p. 842.
Plastic Operation for Reduction of Old Transverse Fractures of Distal End of Radius, Healed with Displacement and Deformity. L. Thornton, Atlanta, Ga.—p. 844.
Massive Squamous Cell Epithelioma Associated with Angioma of Scalp. D. S. Pulford and A. W. Adson, Rochester, Minn.—p. 846.

Diabetic and Arteriosclerotic Gangrene of Lower Extremities.—The series of cases analyzed by Eliason and Wright comprise forty-five cases of arteriosclerotic and fifty-five cases of diabetic gangrene of the lower extremities which have been amputated. The two types are presented together to show their common and dissimilar points and that both are similar regarding circulatory unbalance, with an added local and general faulty metabolism in the diabetic cases. No importance is attached by the authors to the location of the origin of gangrene (i. e., right or left, first or second toes, etc.) as it is a question of arteriosclerosis higher up. The choice of anesthetics appears to be gas-oxygen, short ether, and spinal. The authors advise to operate early and high, with less thought of the stump and artificial limb than of reamputation and its high mortality. Early and nontemporizing operations should be the rule and not the exception. The operative mortality in senile cases, was nil, in diabetic cases 3.6 per cent.

Ileocolic Intussusception Secondary to Carcinoma of Ileum.—The case reported by Probstein and Seelig is unusual because it deals with carcinoma of the small bowel in a young person, aged 35, and because the intussusception that resulted ran a course strikingly like acute appendicitis, without any clinical signs of intestinal obstruction, despite the fact that at operation it was clearly demonstrated that the ascending colon was completely blocked.

Branchial Fistula Causes Cough.—The case reported by Carp occurred in a boy, aged 5 years, who gave a history of an unproductive cough for two years, unsuccessfully treated by a tonsillectomy and medical measures. At operation the inflammatory, incomplete, external fistulous tract was found adherent to the vagus nerve, and after its excision the cough stopped promptly and did not return in a two and a half year follow-up.

Cholecystitis and Cholelithiasis.—Sixty-six per cent of 612 consecutive necropsies at the Mayo Clinic showed grossly visible pathologic changes in the gallbladder; 75 per cent showed microscopic pathologic changes; 77 per cent of the deaths were due to disease of the gallbladder, per se. Eight per cent of the diseased gallbladders showed only minor inflammatory changes. "Cholesterosis" of the gallbladder is essentially a noninflammatory disease. It was present in 38 per cent of the total series. Eighty-two per cent of women who had been pregnant had some grossly visible gallbladder disease. Sixty-four per cent of them showed "cholesterosis" only. In 70 per cent of the patients weighing more than 210 pounds (95.2 Kg.), this lipoid disturbance was grossly visible in the gallbladder wall. Gallstones were found in 22 per cent of the adults; 17 per cent of the men had stones, whereas 28 per cent of the women had them. The youngest patient was a woman, aged 23. Hydrops of the gallbladder was found in 7 per cent of the series. The inflammatory changes in the gallbladder wall and in neighboring organs were less in the cases of stones rich in cholesterin than in the pigmented stones (common stones). Primary carcinoma of the gallbladder was found in 1.63 per cent of the total series. There was one case of primary sarcoma of the gallbladder. Gallstones were found in all the cases of malignant disease involving the gallbladder. Sixty-eight per cent of the diseased gallbladders were accompanied by disease in the appendix. Gastric or duodenal ulcers were found in 29 per cent of the cases of diseased gallbladder. In 80 per cent of the cases of diseased gallbladder there was associated disease in the appendix, stomach or duodenum. Inflammatory changes in the liver are more frequent in cases of inflammatory disease in the gallbladder (stones) than in cases of noninflammatory disease ("cholesterosis"). Inflammatory changes in the pancreas are relatively infrequent in gallbladder disease.

Proliferative Gingivitis of Pregnancy.—Six cases are reported by Monash in which tumor-like masses were observed forming on the gums of pregnant women. They began to form at a variable time during pregnancy, increased in size unless treated, and spontaneously diminished in size or disappeared completely after delivery. The growth is usually accompanied by a generalized gingivitis and represents simply an exaggerated degree of this condition. The name proliferative gingivitis of pregnancy is proposed for all phases of the condition. This type of growth is inflammatory and should not be classed as a tumor. Elimination of all irritating factors and, if necessary, excision of the growth about a month or two after delivery, should constitute the treatment.

Torula Infection in Man.—McGehee and Michelson assert that theirs is the first reported instance in which a torula has been isolated from a negro. The disease was local in type, involving the groin, and was attended with fever and leukocytosis. Recovery followed removal of the diseased glands.

Surgery on Tuberculous Patient.—Griffith advises that local anesthesia be used for operations on the tuberculous whenever possible. Ether does practically no more harm to the tuberculous than to the nontuberculous lung, and a general anesthesia with ether should be employed whenever the necessity arises. Ethylene bids fair to replace ether in these cases. Pulmonary tuberculosis is not a strong contraindication to surgery. On the contrary, many patients are greatly benefited by the surgical removal of conditions that are indirectly retarding their recovery. Whenever a tuberculous patient becomes pregnant, intervention should be considered. If it is deemed wise to allow the pregnancy to go to full term, this should be done; if, however, it is reasonably certain that intervention will have to be done, it should occur early before the lungs have been irreparably injured.

Technic of Hysterectomy.—The structure, to which attention is called by DuBose, in the female is the prototype of the levator prostate in the male. This muscle arises from the os pubis, with the puborectalis, and follows its course backward and internally to it along the sides of the vagina, converging over the anterior vaginal fornix and anterior surface of the cervix; it is inserted into the anterior surface of the cervix at the isthmus, and fuses into the median aponeurotic raphé with the fibers of the same muscle of the opposite side. This median raphé is a strong fibrous or aponeurotic band, extending throughout the midline portion of the uterovesical attachment. On either side the connection between the uterus and the bladder is of loose areolar tissue, and is easily separated by blunt dissection in the lines of cleavage. The median attachment is dense and firmly adherent, holding the base of the bladder in a longitudinal line firmly attached to the cervix uteri, which portion is separated with difficulty by blunt dissection. In a hysterectomy it is usually cut with scissors. This fibrous band of attachment between the bladder and the uterus begins approximately 1 cm. below the isthmus, portio supravaginalis, and extends downward and below on the vagina at its reflection on the cervix and between the vaginovesical attachment. DuBose utilizes this muscle in performing a hysterectomy and claims many advantages for his procedure.

Operation for Anorectal Prolapse in Children.—Heald anchors the replaced rectum externally by means of two silkworm-gut sutures—one passing out through the notch at the sacrococcygeal angle and the other at about the middle of the coccyx. The sutures are removed at the end of two weeks. The efficacy of this method lies in the well known tendency of silkworm-gut to cut its way through the tissues, when under tension. As the suture slowly cuts through the rectal wall and perirectal tissues, healing by granulation follows in its track with the formation of firm connective tissue adhesions.

Tennessee State Medical Association Journal, Nashville

18: 349-380 (April) 1926

Plea for Progress. W. C. Dixon, Nashville.—p. 349.
Proceedings of Tennessee State Medical Association, Memphis, 1926.—p. 354.

Texas State Journal of Medicine, Fort Worth

22: 1-58 (May) 1926

Differential Diagnosis in Chronic Purulent Otitis Media. T. J. Walthall, San Antonio.—p. 13.
Cholecystectomy: End-Results of One Hundred Cases. L. W. Pollok. Temple.—p. 16.
Significance of Abdominal Pain. J. S. Hixson, San Angelo.—p. 19.
Value of Sodium Chloride and Enterostomy in Treatment of Acute Intestinal Obstruction. P. Riddle, Dallas.—p. 22.
Congenital Infantile Hypertrophic Stenosis of Pylorus. J. C. A. Guest, E. Jones and Q. B. Lee, Wichita Falls.—p. 25.
Functions of Spleen. C. A. R. Campbell, San Antonio.—p. 28.
Medical Management of Hyperthyroidism. D. W. Carter, Jr., Dallas. —p. 34.
Primary Handling and Free Drainage of Extensive Trauma. M. W. Sherwood, Temple.—p. 36.
Relationship Between Claim Department and Railway Surgeon. W. L. Alexander, Dallas.—p. 39.
Superstitions and Medicine. H. L. Wilder, Clarendon.—p. 43.

United States Veterans' Bureau Medical Bulletin, Washington, D. C.

2: 551-650 (June) 1926

Care of Tuberculous Patient After Rest Period. W. L. Dunn, Asheville, N. C.—p. 551.
*Routine Stool Examinations for Protozoa. T. Wight, Palo Alto, Calif. —p. 557.
Plea for Better Histories and More Frequent Stool Examinations. F. M. Seibert, St. Paul.—p. 564.
Psychiatrist and His Patients. F R. Sims, Augusta, Ga.—p. 568.
*Pulmonary Tuberculosis Among Deteriorated Psychotics. B. Trippeer, Camp Custer, Mich.—p. 572.
Treatment of Tuberculous Exservice Man in Relation to Disciplinary Regulations. W. A. Colton, Castle Point, N. Y.—p. 576.
Type of Tuberculous Patients Entering Veterans' Bureau Hospitals Today. C. L. Moore, Legion, Texas.—p. 579.
Problems Confronting Those Engaged in Treating Pulmonary Tuberculosis in Veterans' Bureau Hospitals. G. P. Asper, Rutland Heights, Mass.—p. 582.
Measuring Relief Load of Regional Office. E. R. Bush, Cincinnati.—p. 587.
Agriculture as Occupational Therapy in Neuropsychiatric Hospitals. H. J. Kefauver, Washington, D. C.—p 592.
Vincent's Stomatitis. H. G. Fain, Oteen, N. C.—p. 601.
Congenital Total Hemihypertrophy: Two Cases. F. L. Long, Los Angeles.—p. 606.
Perthes' Disease. E. Goldfain, Oklahoma City.—p. 610.
Occult Duodenal Ulcer. G. R. Gates, Bronx, N. Y.—p. 614.
Statistical Studies on Malignant Neoplastic Diseases in United States Veterans' Bureau. P. B. Matz, Washington, D. C.—p. 617.

Routine Stool Examinations for Protozoa.—At the U. S. Veterans' Hospital no. 24, routine stool examinations for protozoa were made on 1,341 newly admitted patients in one year. In all, 3,193 examinations were made. One hundred and fifty-one patients gave a history of dysentery. Cysts or free forms of *Endameba histolytica* were found in thirty-one. These organisms, or their cysts, were found in sixty-one other patients, who gave no history of dysentery. Wight feels that more thorough examination would probably reveal that at least 14 per cent are infected. Evidence is fairly strong that carriers of *E. histolytica* may be successfully treated with bismuth, emetine, and iodide alone, if given in sufficient quantity and for a sufficient length of time. Severe dysentery of several years' duration has been apparently cured by this means, one course of treatment sufficing, there being no return of the organisms in 100 subsequent examinations. Since he is capable of distributing the cysts of *E. histolytica* to others, the healthy carrier is more dangerous to the community than the patient with active dysentery, in whom cystic forms are largely or altogether absent, and should receive treatment whenever possible. The carrier of *E. histolytica* should not be permitted to handle food to be served to others.

Pulmonary Tuberculosis and Mental Disease.—Trippeer asserts that pulmonary tuberculosis is the most frequent and most important complication arising during the course of chronic mental diseases and is responsible for the death of approximately 30 per cent of these unfortunate individuals. The diagnosis of pulmonary tuberculosis among the noncooperative insane offers many difficulties, and all standard methods of arriving at a diagnosis among the sane lose much of their value when practiced among the insane, and many of these methods are practically worthless because of the lack of cooperation on the part of the patient.

Wisconsin Medical Journal, Milwaukee

25: 273-322 (June) 1926

*Operations as Adjuncts in Treatment of Pulmonary Tuberculosis: Induced Diaphragmatic Palsy. J. L. Yates, Milwaukee.—p. 273.
*Evaluation of Surgical Treatment in Pulmonary Tuberculosis. K. E. Kassowitz, Wauwatosa.—p. 279.
*Technical Aspects of Producing Diaphragmatic Palsy. J. M. Cairns, Wauwatosa.—p. 282.
Painful Feet in Children: Prevention and Treatment. C. C. Schneider, Milwaukee.—p. 284.
Comparison of Malarial and Tryparsamide Therapy in Paresis. H. H. Reese, Madison.—p. 289.
Scarlet Fever. W. D. Stovall, Madison.—p. 293.
Hemoptysis in Cardiac Affections. O. R. McMurry, Madison.—p. 297.
Three Cases of Aortic Aneurysm. E. E. McKinley, Madison.—p. 299.
Perforation of Gallbladder Twice in Same Patient with Complete Recovery. D. Fisher and E. H. Mensing, Milwaukee.—p. 302.
Repair of Bone Fracture. F. D. Geist, Madison.—p. 303.

Induced Diaphragmatic Palsy in Treatment of Pulmonary Tuberculosis.—Yates asserts that induced diaphragmatic palsy, used in conjunction with other procedures in the treatment of pulmonary tuberculosis, is safe and is followed by such improvement in general and local conditions as to warrant serious consideration.

Id.—Evidence obtained by Kassowitz from observations on eighty-one patients for sixteen months after operation shows that palsy of the diaphragm can be induced with minimal danger and that it is harmless to all and helpful to many patients. Combined with other measures, it has helped to arrest the disease and to expedite recoveries; it has eliminated the need for more radical operations in some patients and has reduced the severity of such procedures as were unavoidable. Paralysis of the diaphragm is an effective adjunct in treatment of pulmonary tuberculosis, because it acts in accordance with natural responses, increases the amount of blood delivered to the lung and minimizes cardiac labor.

Id.—Three types of operation for producing diaphragmatic palsy are discussed by Cairns: phrenemphraxis for temporary nerve block; exeresis and phrenicotomy for permanent paralysis. The immediate effects of these procedures have been noted in eighty-one patients. A paradox, the raising of the paralyzed side produced by increased intra-abdominal pressure occasioned during inspiratory contraction of the sound side of the diaphragm, occurred in twenty-one, elevation and immobility in forty-nine and elevation and restricted mobility in eleven. In the last, the less favorable results were noted before it was learned how to locate and identify accessory branches. Phrenemphraxis attained by crushing has been performed sixty-one times; by transverse division of nerve fibrils within the sheath, twice; exeresis, sixteen times, and partial exeresis with phrenicotomy, twice. The object of treatment is to minimize psychic distress as well as physical disability and not to develop more impressive statistics. The most convincing evidence of the help secured is presented by patients who improve after the nerve is blocked, hold their improvement until the diaphragm becomes active again, and then, as they begin to get worse, request another operation, even suggesting the advisability of a permanent block. Benefits have been notable in the majority of patients.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

1: 123-181 (June) *1926*

*Sclerema Neonatorum: Chemistry of Subcutaneous Tissues. II. G. A. Harrison.—p. 123.
*Nephritis in Childhood. N. B. Capon.—p. 141.
Case of Hypertelorism. W. B. Drummond.—p. 166.
*Case of Hypertelorism Without Mental Defect. F. M. B. Allen.—p. 171.
*Chronic Ulcerative Colitis in Children. G. Bourne.—p. 175.

Subcutaneous Tissue in Sclerema Neonatorum.—Five cases of sclerema neonatorum (adiposum) are reported by Harrison, with postmortem and histologic examinations in four. The fifth patient recovered. In two cases there were cysts in the subcutaneous fat. Histologically, in the four cases, the subcutaneous fat showed evidence of chronic inflammation and repair, with giant cell formation. In each case there were abundant anisotropic crystals in the fat and lying free. The roentgen ray revealed opaque deposits. The chemistry of the subcutaneous fat has been studied in four cases—extensively in two. The melting point was raised slightly, and there was an increase in the total cholesterol, but the iodine and saponification values were similar to control cases of corresponding ages. The view that sclerema is a primary inflammation of the subcutaneous tissues of unknown cause is upheld.

Nephritis in Childhood.—A clinical and pathologic classification for the inflammatory kidney diseases of childhood is suggested by Capon. It is essentially a reversion to the older scheme but provides a place for the true nephroses. Renal efficiency tests, while commended on general principles as the rational procedure in investigation of disease, have not, in Capon's experience, furnished any diagnostic information of importance. They are sometimes of help in determining the degree of the lesion and whether it is advancing or retrogressing. They are of most value in prognosis and in directing diet and treatment. The tests must be repeated and taken into consideration along with clinical and other laboratory examinations. It is stated definitely that continued nitrogen retention is of importance and denotes serious injury and that a persistently low phenolsulphonphthalein excretion is also serious. Kidney decapsulation is held worthy of further trial. It is probable that results would be better if the operation were carried out sooner.

Hereditary Factor in Hypertelorism.—Support to Greig's theory of an hereditary want of balance in development is given in the case cited by Allen. In both parents the eyes were rather widely separated. In the father there was some flattening of the nose in addition.

Ulcerative Colitis in Child.—Bourne reports a case of ulcerative colitis in a girl, aged 7, and analyzes ten other proved cases found in the literature.

British Medical Journal, London

1: 1073-1108 (June 26) *1926*

Lethargic Encephalitis in England. A. S. MacNalty.—p. 1073.
*Absorption of Mercurials from Ointments Applied to Skin. R. B. Wild and I. Roberts.—p. 1076.
*Treatment of Postencephalitic Parkinsonism by Nicotine. H. Moll.—p. 1079.
*Explanation of Two Forms of Bilirubin Demonstrated by Van Den Bergh Reaction. G. A. Collinson and F. S. Fowweather.—p. 1081.
Double Vagina and Single Uterus. R. C. Bartlett.—p. 1083.
Tuberculin Liniment. F. E. Gunter.—p. 1083.
Anaphylaxis Following Administration of Serum. E. R. C. Walker.—p. 1084.

Absorption of Mercurials by Skin.—The investigation of Wild and Roberts disclosed that all mercurials, when rubbed into the skin, were absorbed to some extent from all the bases tested. In all cases the greatest absorption took place from the lard basis, and the amount of absorption with the lard basis increases more with a prolonged rubbing than with other bases. Hydrous wool fat was absorbed to a greater extent than lard, but the mercurial was not absorbed with it, so that the absorption of mercury was actually less than from a lard ointment of equal strength. The absorption from a paraffin base was always less than from a lard base. The amount of mercurial absorbed was proportional to the amount of mercurial in the ointment, at any rate up to 30 per cent of the mercurial. Of the different mercurials examined, mercuric oxide was the most readily absorbed, either as an ointment or in the form of the official oleate. This, however, is not suitable for use when the general absorption of mercury is desired, as ointments containing more than 10 per cent of the oxide cause considerable irritation of the skin. Ammoniated mercury and mercuric salicylate were absorbed almost as well as the oxide. Calomel was absorbed to a less extent than any of the other mercurials examined. Metallic mercury was absorbed rather less than the oxide, but can be used in stronger concentration without causing undue irritation of the skin. The official mercurial ointment with a lard base seems to be the best preparation for insuring the general absorption of mercury. The inunction of 4 Gm. for two minutes gave, on an average, an absorption into the body not exceeding 0.12 Gm. of mercury, and after ten minutes' inunction an absorption not exceeding 0.17 Gm.

Use of Nicotine in Treatment of Parkinsonism.—Thirteen patients with postencephalitic parkinsonism have been treated with nicotine by Moll. Nine showed improvement; four remained unaffected. An initial dose of $\frac{1}{30}$ grain (2 mg.) was given thrice daily at the beginning of the treatment and was continued for a few days. If at the end of this period the pulse chart did not show any appreciable change, the dose was increased. Such a procedure was adopted every time the dose was increased until the full dose was reached. This varied between $\frac{1}{10}$ and $\frac{1}{5}$ grain (0.006 and 0.012 Gm.) thrice a day, and was always followed by a well marked rise of the pulse rate of at least 12 to 20 beats a minute. The patient was afterward kept on the full dose for two or three weeks or until symptoms of intolerance set in. In many cases, however, it was found that nausea and vomiting promptly disappeared after the dose had been repeated a few times, and that the treatment could be continued. No permanent cures were effected. The treatment should therefore be repeated at frequent intervals, say, of from two to three months. Nicotine had an undoubted action in reducing muscular rigidity, and this was ascribed to the paralyzing effect of the drug on the prespinal reflex arc subserving plastic tone, thus throwing new light on the dual nature of muscular tone and adducing fresh evidence that one element of muscular tone is under the control of the sympathetic nervous system.

Bilirubin.—Collinson and Fowweather are of the opinion that, while the bilirubin giving the prompt direct van den Bergh reaction is an alkali salt, probably the ammonium salt, the form that is responsible for the indirect reaction (that is, in the presence of alcohol and after the precipitation of protein) is the free acid.

China Medical Journal, Shanghai

40: 409-516 (May) 1926

Chronic Laryngeal Stenosis Complicating Kala Azar and Diphtheria. A. M. Dunlap.—p. 409.
*Reputed Diuretic Action of Huang Ch'i. C. F. Schmidt.—p. 415.
Injection Treatment for Hemorrhoids. H. E. Crowe.—p. 417.
Fostering Psychoneuroses in Infancy. A. H. Woods.—p. 420.
Some Newer Remedies. B. E. Read.—p. 428.
Gum-Mastic Test. S. D. Joffick.—p. 431.
*Mercurochrome and Tartar Emetic in Schistosomiasis. G. T. Tootell.—p. 440.
Local Anesthesia. H. W. S. Wright.—p. 448.
Two Cases of Actinomycosis of Lung. K. M. Woo and M. P. Young.—p. 461.
Case of Subacute Combined Degeneration of Cord Associated with Ankylostomum Duodenale and Achlorhydria. P. V. Early.—p. 465.

Diuretic Action of Huang Ch'i.—After other medication had failed the symptoms improved and albuminuria disappeared under treatment with a decoction of huang ch'i. Schmidt investigated this drug, but failed to find any alkaloid, glucoside or other potent principles. Physiologic experiments conducted on frogs and dogs yield no evidence that the drug can improve circulation or cause diuresis. Nothing is known of its effects on nephritic animals.

Mercurochrome and Antimony and Potassium Tartrate in Schistosomiasis.—Tootell asserts that mercurochrome is the drug of choice for treating patients during the early stages of the disease, when there are no serious complications, and when the hemoglobin count is 70 per cent or above. In cases of long standing, in which the patients have low resistance, it is better not to submit them to the reaction from injection of mercurochrome, but to give antimony and potassium tartrate in increasing doses intravenously, and tonics containing iron and arsenic by mouth.

Glasgow Medical Journal

23: 393-468 (June) 1926

*Supporting Bulging Brain in Extensive Decompressive Trephining. A. Young.—p. 393.
Hospitals in Relation to Public and Profession. A. E. Maylard.—p. 404.
Present Day Methods in Treatment of Tuberculosis. J. Crocket.—p. 420.
*Paroxysmal Tachycardia of Ventricular Origin with Stokes-Adams Syndrome: Retrograde Conduction; Partial Heart Block. G. A. Allan.—p. 440.

Decompressive Trephining Operation.—Young turns down a very large skin flap, including all layers of the scalp except the pericranium; then turns up a smaller flap consisting of temporal fascia and pericranium. Next the skull is opened widely. Then the dura is opened by raising a third flap, which is, like the first, turned downward. It should be sufficiently less in area than the size of the bone gap to allow of the marginal portions of dura furnishing some protection to the brain from pressure and laceration on the bone edges. When the brain has been sufficiently inspected and any necessary detail of technic has been carried out, the second flap—the fascial-pericranial flap—is brought down and sutured to the free edge of the dural flap (the third flap), or, if there is excess, to such a level of this as to give the necessary degree of support to the bulging brain, the excess being used either to reinforce the support, as indicated above, or being cut away and used to make good any defects at the lateral margins or angles of the gap. Hemostasis having been adequately provided for in respect of the first, or scalp, flap the latter is then replaced, and its edges are carefully and closely sutured in place once more. A copious absorbent external dressing, firmly bandaged, is then applied over the whole. The procedure is presented as of value in extensive decompression operations.

Paroxysmal Tachycardia with Stokes-Adams Syndrome.—A case of paroxysmal tachycardia arising in the right ventricle is recorded by Allan. The ventricular rate was unusually rapid, being from 230 to 270 in recorded paroxysms. During paroxysms the patient presented the Stokes-Adams syndrome. Retrograde stimulation of the auricle was present with 2 to 1 retrograde heart block. Quinidine sulphate had a distinct effect in controlling the paroxysms.

Lancet, London

1: 1241-1292 (June 26) 1926

*Carbohydrate Metabolism in Health and Disease. H. MacLean.—p. 1241.
*Nonspecific Protein Injections in Chronic Arthritis. W. Yeoman.—p. 1246.
*Pathologic Action of Light on Eye. II. W. S. Duke-Elder.—p. 1250.
*Simplified Technic for Blood Transfusion by Kimpton-Brown Method. W. B. Gabriel.—p. 1255.
*Acute Abdominal Emergency. O. W. Roberts.—p. 1256.
Serious Hemorrhage Following Opening of Peritonsillar Abscess. N. Patterson.—p. 1256.
*Gangrene of Nose Due to Diabetes Mellitus. K. Ardeshir.—p. 1256.
Two Cases of Horsepox. F. W. M. Greaves.—p. 1257.

Carbohydrate Metabolism in Health and Disease.—In this lecture MacLean discusses: renal glycosuria and the dangers of insulin in this condition; sugar tolerance tests in glycosuria; glycosuria of pituitary and thyroid gland origin, and metabolism in diabetes, especially of fats.

Nonspecific Protein Injections in Chronic Arthritis.—In the fifty cases reported on, Yeoman used typhoid-paratyphoid vaccine made up in the approximate proportions of two parts of *B. typhosus* to one part each of *B. paratyphosus* A and B. The initial dose was 50 million, each subsequent dose being increased by 100 million. Four days elapsed between injections. All patients had balneologic treatment in the interval between the injections. Of the fifty patients, after an average stay of four weeks in the hospital, forty-four were discharged as definitely improved, and six as no worse but no better. The types that respond best are the acute and subacute in which the disease is confined to the periarticular tissues—in these cases permanent benefit is assured in over 90 per cent. When the joints themselves are affected, definite improvement occurs with arrest of the disease, but naturally bony changes cannot be altered. Though the reactions are severe the contraindications are few—disease of the myocardium, gross kidney disease, chronic alcoholism, tuberculosis and syphilis being the chief. In view of the proved ability of these injections to cut short an attack of rheumatic fever, Yeoman pleads for an extended trial of this treatment in the hope that much invalidity from heart disease might be prevented. The patients who do not do well are those of the menopause group of the chronic villous type, and those showing achylia.

Rôle of Light in Cataract Production.—The thesis is advanced by Duke-Elder that the primary cause of cataract generally is probably to be associated with the direct action of incident radiant energy of any wave length on the lens, increasing the lability of its colloidal system and deranging the autoxidation system on which its metabolism depends. This renders its proteins more prone to coagulation by changes in the hydrogen ion concentration (which also affects the autoxidation system directly), changes in the salt content, osmotic changes determined locally by the action of radiant energy on the lens capsule or by general metabolic disturbances, and by possible continuous photosensitization. To these must be added the influence of more subtle factors inseparable from the economy of so complex a physicochemical mechanism as is living matter.

Modification of Kimpton-Brown Blood Transfusion.—Gabriel describes a method for filling a Kimpton tube through a needle. The needle is the Kaliski pattern, gage 15, with a metal connecting piece and a short length of rubber tubing (size 9, 1½ inches long), which completes the junction with the Kimpton tube. The needle, connecting piece and rubber tubing are prepared by boiling; it is not necessary to paraffin them. The apparatus is put together in such a way that the end of the nozzle of the Kimpton tube just touches the metal coupler, so that the rubber tube is practically not in contact with the flowing stream of blood.

Acute Abdominal Emergency.—Roberts relates the case of a boy, aged 6, who, while playing on a ladder, slipped and fell a few feet, injuring the upper part of the right thigh; shortly afterward he vomited and complained of abdominal pain. He was put to bed and three days later had recovered sufficiently to be allowed to get up; but the abdominal pain then returned and two days later his physician ordered his admission to hospital. On examination there was a small abrasion about 2 inches below the inner end of Poupart's ligament on the right side; the lower half of the abdomen showed no respiratory movements, and the right side was tender and rigid. Clinically the condition appeared to be due to an appendix abscess. By a right paramedian incision a quantity of free purulent fluid was found, and the small intestine was seen to be distended. On investigation of the cause of the distention a hard, irregular body was discovered passing across the right iliac fossa and penetrating the root of the mesentery; when it was manipulated out of the wound it proved to be a twig of a tree, which must have been driven into the abdominal cavity at the time of the fall. This twig had pierced the femoral ring, the parietal peritoneum and the root of the mesentery, and had come to rest alongside the second part of the duodenum. Round the twig there was an abscess, containing thick, creamy pus and walled by the tissues of the iliac fossa and by coils of small intestine. A large drainage tube was inserted into the abscess cavity and the abdomen closed. The boy made an uninterrupted recovery.

Gangrene of Nose Due to Diabetes.—Ardeshir's patient was only 8 years of age. The slough was removed surgically. The urine became sugar free after the administration of 20 units of insulin over a period of three days. The wound healed promptly.

Bulletin de l'Académie de Médecine, Paris

95: 589-601 (June 15) 1926

*Iodine Treatment of Encysted Hydrocele. P. Bazy.—p. 592.
*Mechanism of Hydronephrosis. Legueu et al.—p. 593.
The Booklet on Infant Hygiene Brought Down to Date.—p. 598.

Encysted Hydrocele.—Bazy used successfully iodine injections in treatment of hydrocele; among others, in a case of epididymal cyst and in another of a vaginalis hydrocele, containing, respectively, 100 and 450 cc. of fluid. He used a tincture made with 1 Gm. of iodine and 12 Gm. of alcohol. After local anesthesia with cocaine, the fluid was aspirated and then a corresponding amount of the iodine was injected, and left for five minutes. The patients were kept in bed for a few days, but only as a precautionary measure. The method seems to be harmless, simple and effectual.

The Physiology of the Renal Pelvis in the Light of Pyeloscopy.—Legueu, Fey and Truchot describe their technic for roentgen-ray screen examination of the renal pelvis, as applied in 600 normal or pathologic subjects. They conclude that the pelvis of the kidney possesses special motor centers, controlling its contractions, and that the upper orifice of the ureter presents a kind of sphincter. Hydronephrosis in certain cases may be induced by total or partial chronic retention of urine from morbid contraction of this sphincter. Complete and acute retention may be due to spasmodic contractions of the kidney pelvis. Hydronephrosis thus may be a neuromuscular disturbance of purely dynamic origin. Mechanical factors may play only a secondary rôle, except in instances of calculi. Evidently a conservative operation is futile in chronic hydronephrosis, while any intervention is needless in the acute form. Antispasmodic therapy is indicated in the latter case. In infectious pyelonephritis with slight distention, the prognosis is benign; irrigation of the pelvis, supplemented by vaccine treatment, answers the purpose. In the graver cases, this treatment may fail, the renal infection entailing pyonephrosis.

Bulletins de la Société Médicale des Hôpitaux, Paris

50: *955-1001 (June 11) 1926*

*Roentgenotherapy of Brain Tumors. A. Coyon et al.—p. 955.
Idem. A. Cain et al.—p. 958.
*Heart Malformations. Brulé and Gilbert-Dreyfus.—p. 963.
Multiglandular Syndrome in Dwarfism. R. Benard et al.—p. 967.
Nervous Leprosy with Spasms. Hudelo et al.—p. 971.
Silent Lesions of the Heart. E. P. Benoit.—p. 976.
Anemia from Neo-Arsphenamine. Widal and Bertrand-Fontaine.—p. 980.
Septicemia from Filtrable Virus from Rat Bite. Brodin and Dujaric de la Rivière.—p. 985.
Study of the Pigments, Biliary Salts and Cholesterol in a Fistula Case. Chabrol et al.—p. 992.
*Treatment of Gangrene of the Lung. P. Jacob.—p. 995.
Effect of Boyden Meal on the Gallbladder. R. Feissly.—p. 998.

Roentgen Rays in Treatment of Brain Tumors.—Coyon, Solomon, Willemin, Cain and Rachet used roentgen rays in two cases with cerebrospinal hypertension, probably from a tumor of the brain. Penetrating rays were applied to both temples and to the back of the head. From 500 to 1,000 R. units were used for each exposure; a total of 3,500 units for each field of irradiation. The sittings took place two or three days apart. Headache, dizziness and vomiting subsided after four sittings; simultaneously the choked disk returned toward normal, and the sight markedly improved. A month later, the patients seemed to be clinically cured. As a precautionary measure, a second series, totaling 7,000 units, was given in one case.

Eighteen Years' Survival with Multiple Malformations of the Heart.—In Brulé and Gilbert-Dreyfus' case, complete atresia of the tricuspid valve was associated with considerable atrophy of the right ventricle, hypertrophy of the left ventricle and an interventricular communication. There was also total stenosis of the pulmonary artery, and dilatation of both auricles, with persistence of Botallo's duct. The girl suffered from dyspnea on exertion and cyanosis. She died at the age of 18, from bilateral pulmonary tuberculosis of rapid course.

Recovery from Pulmonary Gangrene Under Pneumothorax.—In Jacob's case, an artificial unilateral pneumothorax had induced the cure in eight months of a chronic pulmonary gangrenous process with a large cavity.

Comptes Rendus de la Société de Biologie, Paris

94: 1049-1108 (April 30) 1926. Partial Index

Spirochete of Tuberculous Hemoptysis. Bezançon and Etchegoin.—p. 1056.
Oral Vaccination Against Cholera. Horowitz-Wlassowa and Pirojnikowa. —*p. 1067.*
*Local Immunization Against Tuberculosis. N. Jizuka.—p. 1070.
*Avitaminosis and Tuberculosis. Lawrynowicz and Bohdanowicz.—p. 1085.
*Output of the Heart in Pregnancy. S. A. Gammeltoft.—p. 1099.
*Manganese and Tuberculin Shock. L. E. Walbum.—p. 1106.

Local Immunization of the Lung Against Tuberculosis.—Jizuka injected Besredka's egg antigen into the trachea of guinea-pigs and rabbits. Three injections were made. A week later the animals were inoculated, by the same way, with living tubercle bacilli. At necropsy, the pulmonary lesions were less pronounced in the animals thus treated than in the controls.

Influence of Avitaminosis on Experimental Tuberculosis.—Lawrynowicz and Bohdanowicz' experiments showed that development of tuberculosis was more rapid in mice on a deficiency diet. The results seemed to be analogous to those with an insufficient amount of food.

Minute Output of the Heart in Pregnancy.—Gammeltoft estimated the minute volume output of the heart in five pregnant women. It was constantly increased by about a liter and a half per minute. This is probably due not only to the increase of metabolism, but also to an augmented volume of blood. The latter may induce hypertrophy of the heart in pregnancy.

Manganese in Prevention of Tuberculin Shock.—Walbum succeeded in preventing shock from tuberculin injection, by treating tuberculous guinea-pigs with manganese chloride. This may be due to a stimulated destruction of tuberculin in the animal organism under the influence of this salt. It may also explain the subsidence of fever in pulmonary tuberculosis under the effect of manganese.

Jour. de Physiol. et Path. Gén., Paris

24: 1-214, 1926

*Stimulants for the Respiration. E. de Somer.—p. 1.
Physiology of the Blood Platelets. Klecki and Pelczar.—p. 11.
*Peripheral Circulation in Man. D. Daniélopolu et al.—p. 27.
Nocturnal Acuity of Vision. J. Beyne and G. Worms.—p. 38.
Functions of the Cerebellum. Papilian and Cruceanu.—p. 47.
Lactic Acid of the Blood. Collazo and Morelli.—p. 54 and p. 76.
*Hemolysis in Transfusion. R. Cruchet and J. Caussimon.—p. 61.

The Stimulants for Respiration.—De Somer experimented with carbon dioxide, hydrochloric acid and sodium. He introduced carbon dioxide into the lungs of dogs through a tracheal canula. This was followed by a complete separation of the vocal cords, as in a deep inspiration, persisting for a certain time. The distention of the pulmonary alveoli by the carbon dioxide provides a peripheral stimulus, which is conducted to the respiration center by the vagi. This results in a reflex opening of the larynx, and exaggerated inspiration. Hydrochloric acid or sodium were injected intravenously. The first seems to increase the concentration of carbon dioxide in the alveoli, thus reinforcing the inspiratory "influx." The action of sodium is the reverse; consequently it causes exaggeration of the expiration. Not the hydrogen-ion concentration of the blood, but the carbon dioxide is a stimulant for reflex respiration.

The Peripheral Circulation in Man.—Daniélopolu, Radovici and Aslan's study was conducted on a man after left cervicothoracic sympathectomy for essential epilepsy. The operation included extirpation of the inferior cervical and the first thoracic ganglions. The plethysmograph showed the occurrence of peripheral vasodilatation during muscular work. Evidently the vasodilator nerves do not pass through the stellate ganglion, and thus they remained intact after the operation. It is probable that these nerves pass from the spinal cord through the posterior roots; they may enter the peripheral nerves directly, without traversing *the rami communicantes.* Muscular exercise induced also vasoconstriction in the limb operated on. This seems to prove that the phenomenon is a mechanical one. It occurs evidently without participation of the vasoconstrictor nerves, since the latter had been removed by the operation.

Rôle of Hemolysis in Accidents from Transfusion of Blood.—Cruchet and Caussimon emphasize that blood transfusion between different animals or from animal to man, is always accompanied by slight hemolysis, independent of the agglutination. It induces a urinary syndrome with minimal traces of albumin, with or without casts and erythrocytes; there may be traces of urobilin. These phenomena appear a few hours after the transfusion; they vanish in two days at most, without any consequences. Grave accidents were observed with blood transfusion from horse to dog. They presented the clinical picture of rapidly progressive fatal anemia; the kidney disturbances seemed to be only of secondary importance.

Paris Médical

59: 573-604 (June 19) 1926

Gynecology in 1926. L. Houdard and L. Bonnet.—p. 573.
Conservative Operations on the Adnexa. Forgue.—p. 580.
Uterine Hemorrhages of Ovarian Origin. A. Schwartz.—p. 588.
Obstetrics in 1926. J. Ravina.—p. 590.
Induced Abortion for Vomiting of Pregnancy. J. L. Audebert and A. Galy-Gasparrou.—p. 593.
*Retraction of the Uterus During Delivery. F. Commandeur.—p. 597.
Anesthesia in Obstetrics. L. Funck-Brentano.—p. 601.

Retraction of the Uterus During Delivery.—Commandeur explains that retraction of the uterus must not be clinically confounded with contraction. The physiologic difference consists in a pronounced and transient shortening of the uterine fibers in contraction, and in the slight but continuous shortening in retraction. The latter is a physiologic factor in the involution of the uterus in the first days after childbirth. During delivery, retraction seems to occur only when the membranes have ruptured and the amniotic fluid has escaped. It may be present as the result of tetanic contractions or abnormal presentations. The whole of the uterus may be involved in the retraction; separate retraction rings may be recognized by external palpation; they may leave imprints on the fetus. The retraction is not influenced by drugs which usually induce paralysis of the uterine fibers, or even by deep anesthesia. It yields only slightly to dilation procedures. While mild forms of retraction of the uterus may pass unobserved, the pronounced forms may entail grave dystocia or even rupture of the uterus. Early recognition of the retraction may prevent grave consequences.

59: 605-620 (June 26) 1926

Importance of Observation in Medicine. Saint-Jacques.—p. 605.
Sunbaths in Pulmonary Tuberculosis. Hervé et al.—p. 609.
Chemotherapy of Tuberculosis. A. Grigaut and A. Tardieu —p. 612.
*Chancroid. Lortat-Jacob and Poumeau Delille.—p. 618.

Vaccine Treatment of Chancroid.—Under the vaccine treatment the buboes rapidly subsided, but the chancroid persisted unmodified in ten of the fifteen patients with soft chancre treated by Lortat-Jacob and Poumeau-Delille with Ducrey's streptobacillus vaccine. About 225 millions of the bacilli were usually given at the first intravenous injection, and then 335, 450 and 550 millions. From three to five injections were given, the intervals, three or five days. The general reaction was always intense. The treatment failed in ten cases; only five patients were apparently cured, one of them incompletely. While almost all the buboes were cured in two or three days, the chancroid healed only in 30 per cent. The vaccine seems to be most effectual in combating the complications rather than the chancroid itself. It may be advantageously combined with local treatment.

Presse Médicale, Paris

34: 801-816 (June 26) 1926

*Roentgenoscopy of Skull in Syphilis. Léri and Cottenot.—p 801.
Digestive Disturbances in Pernicious Anemia. J. Mouzon.—p. 807.

Roentgen-Ray Diagnosis of Tardy or Congenital Syphilis of the Skull.—Léri and Cottenot report nine cases in which neither the clinical features nor the Wassermann test suggested the diagnosis of syphilis. Nevertheless, roentgen-ray examination revealed tertiary lesions of the inner table of the skull. Four of the patients presented general or jacksonian epilepsy, three had severe headaches, with facial paralysis in one case and dizziness in another. A gumma of the bones was found in one patient, ulceration or exostosis or both in the others. The patients became greatly improved under bismuth treatment. Penetrating rays should be avoided. The vertex and the base of the skull should be examined separately, and in different positions of the head.

34: 817-832 (June 30) 1926

Pathogenesis of Arterial Hypertension. Laubry and Doumer.—p. 817.
*Attitude as Diagnostic and Therapeutic Measure. G. Leven.—p. 821.
Rôle of the Kidney in Diabetes. H. Chabanier et al.—p. 822.

Diagnostic and Therapeutic Value of Change of Attitude in Certain Conditions.—Leven emphasizes that aerophagy and air in the colon may entail gastro-intestinal, respiratory and circulatory syndromes simulating those from organic lesions. The clinical picture of angina pectoris or asthma, from aerophagy, can hardly be differentiated from that of the essential affection. Only changing the patient's position may disclose the real cause of the disturbance. Aggravation of pathologic conditions under the gas distention may mislead the prognosis in disease of the digestive tract, lung or heart. He describes a case in which slight pulmonary congestion was associated with intense dyspnea. The latter disappeared as soon as the patient turned from the dorsal position to the left side. It returned as she changed to lie on her back. Evidently the dyspnea was caused by compression of the lung by a segment of the intestine, distended with air. Analogous compression of the lung and heart caused severe dyspnea and tachycardia in an asthmatic subject. He describes also two cases in which distention from air in the bowel *simulated* appendicitis in one, and "epidemic" hiccup in another. Change of the patient's position brought immediate relief.

Revue Médicale de la Suisse Romande, Geneva

46: 389-452 (June 10) 1926

*The "Five O'Clock" Sign. C. Odier.—p. 389.
Purified Antitoxic Serums. E. Grasset.—p. 404.
*Calcium Treatment of Tuberculosis. M. Bothézat.—p. 409.
Early Laminectomy for Trauma Affecting the Spinal Cord. C. Perret. —p. 414. C'cn.—p. 453.
Suffocating Bronchiolitis Relieved by Cesarean Section. L. Choquard. —p. 437.

46: 453-516 (June 25) 1926

Diverticular Sigmoiditis. M. Roch and J. Mozer.—p. 475.
Mental Confusion in Pregnancy. Chatillon and R. de Saussure.—p. 478.
Present Status of Mongolian Idiocy. Naville and de Saussure.—p. 481.

The Five o'Clock Sign.—Odier states that a neurotic, neuropathic tendency is generally found in patients whose complaints of various ills seem to stop toward evening, and they say they feel much better. It indicates a loss of nervous poise, maladjustment to occupation and social environment. The mornings, the Mondays, are dreaded and found dreary and full of ills. Persons with normal nerve tone usually feel better in the morning.

Intravenous Injections of Calcium Chloride in Tuberculosis.—Bothézat reports the results of calcium chloride treatment of thirty tuberculous patients during the last year. He used small doses of a 5 or 10 per cent solution. A dose of 5 cc. was injected intravenously, daily. A series consisted of twelve injections; and these series were repeated three or four times; in two cases even seven times, a week apart. No by-effects were observed with this method. In ten patients the treatment did not arrest the far advanced disease; eight have died. In thirteen the condition remained stationary, losing its progressive character. Seven presented a constant local and general improvement. The beneficial influence of the calcium chloride may have been due to regulation of the vagosympathetic balance, strengthening the cardiac systole and the increase of diuresis. He adds that as calcium chloride is eliminated soon after its absorption, it is not retained in the tuberculous foci. The usual doses do not exert any bactericidal action, nor do they induce any apparent reaction in the organism.

Schweizerische medizinische Wochenschrift, Basel

56: 561-584 (June 12) 1926

Donnan's Equilibrium. L. Michaud.—p. 561.
The Diet in Pregnancy and Nutrition. H. Guggisberg.—p. 564.
The Auditory Hair Cells. K. W. Zimmermann.—p. 566.
Hot Mineral Baths in Circulatory Disturbances. Kornmann.—p. 569.

Chirurgia degli Organi di Movimento, Bologna

10: 317-536 (April) 1926

*Trauma of Semilunar Cartilage. V. Ferrero.—p. 317.
*Periarterial Sympathectomy for Arthritis. A. Turco.—p. 333.
Congenital Scoliosis with Defective Development of Foot. R. Zanoli.—p. 346.
*Fate of Bone Wedge Implant. G. Faldini.—p. 357.
*Hip Joint Disease. J. Valls and J. Verbrugge.—p. 364.
Correction of Acquired Genu Recurvatum. L. de Gaetano.—p. 373.
Fracture of the Heel-Bone. E. Fiorini.—p. 403.
Fracture of One Condyle of the Femur. A. Bertocchi.—p. 429.
*Fracture of the Knee. R. Zanoli.—p. 463.
Metal Aids in Treatment of Fractures. A. Rossi.—p. 486.
Correction of Madelung's Deformity. A. Catterina.—p. 517.
Joint Between Clavicle and Coracoid Process. A. Possati.—p. 533.

Injury of the Semilunar Cartilages of the Knee.—In the five cases analyzed by Ferrero the lesion was different in each. The damaged cartilage was removed, with complete recovery of function, even to playing football. There were absolutely no objective signs of the injury in one case, and roentgen-ray examination was negative in all but one.

Periarterial Sympathectomy in Arthritis.—Turco's experiments on dogs confirmed his theoretical assumption that the hyperemia induced by decortication of the artery would hasten the healing of an acute purulent arthritis and ward off ankylosis. No benefit need be anticipated in chronic cases. In acute arthritis the result was more apparent the shorter the interval since the onset.

Fate of Bone Wedge Implant.—Faldini's illustrations show the complete incorporation of the wedge in the bone four years after the operation for correction of paralytic talipes cavus.

Hereditary Nature of Coxa Plana and Arthritis Deformans.—Valls and Verbrugge explain that a hereditary predisposition in the hip joint may be roused by trauma, infection or endocrine derangement, and entail osteochondritis in the infant, coxa plana in the adolescent, and arthritis deformans in adults. In one of the three cases described, the mother, brother, aunt, uncle and cousins had the same affection; in another, the father and son. The roentgen rays may reveal the same pathologic condition in the apparently sound mate joint.

Fracture of the Knee.—Zanoli discusses the lessons learned from twelve cases of fracture of the lower epiphysis of the femur and twenty-two of the upper epiphysis of the tibia.

Pediatria, Naples

34: 625-688 (June 15) 1926

*Cod Liver Oil Vitamin. M. Flamini.—p. 625.
Urinary Organs in Whooping Cough. S. Cannata.—p. 662.
Epidemiology of Kala-Azar. F. Paradiso.—p. 664.
Hemorrhagic Diatheses. P. Ritossa.—p. 669.

Cod Liver Oil Vitamin.—Flamini studied in infants the antirachitic vitamin extracted from cod liver oil by Zucker's method. It improves the absorption and fixation of calcium, diminishes intestinal putrefaction and constipation, improves the resorption of fat, modifies eczema, cures rickets and spasmophilia and improves vagotonic manifestations, such as hives.

Policlinico, Rome

33: 825-859 (June 14) 1926

*Pseudoappendicitis from Malformation. A. Dami.—p. 825.
Asymptomatic Appendicitis in a Hemophiliac. A. Bonadies.—p. 829.
Optic Neuritis. E. Battoni.—p. 831.

Pseudo-Appendicitis from Malformation.—The constipation and symptoms of chronic appendicitis with exacerbations were due in Dami's patient to an internal hernia of the small intestine. It was located between the end of the ileum and a peritoneal fold connecting the latter with the cecum and the appendix.

33: 273-332 (June 15) 1926. Surgical Section

*Pulsating Tumors in Bone. R. Alessandri.—p. 273.
Fractures of the Humerus in Children. C. Colucci.—p. 315.
Congenital Mixed Tumor of the Mesentery. A. Piccinelli.—p. 322.

Pulsating Tumors in Bone.—Alessandri observed four cases of bone metastasis of hypernephromas; three of them were pulsatile. Such a metastasis in a bone may be the only one. Therefore, extirpation of the original tumor, which may be quite small at the time, should be taken into consideration.

Riforma Medica, Naples

42: 505-528 (May 31) 1926

Hemorrhagic Diatheses. F. Galdi.—p. 505.
Pelvic Metastases of Cancer. V. Palumbo.—p. 515.
Mineral Mud Treatment. A. Vinaj.—p. 522.
Bronchial Spirochetosis Plus Syphilis. C. Maderna.—p. 524.

Anales de la Facultad de Medicina, Montevideo

11: 1-64 (Jan.) 1926

*Stenosis of the Duodenum. G. Arrizabalaga.—p. 1.
*Traumatic Osteoma in the Thigh. J. Cunha.—p. 5.
*Uricacidemia. A. Sáenz and M. Haendel.—p. 15.
*The Lactic Acid in the Blood. I. J. A. Collazo and J. E. Morelli.—p. 30.
*Local Vaccine Treatment for Staphylococcal Processes. C. Stajano and E. Hormaeche.—p. 46.

Stenosis of the Duodenum.—Arrizabalaga located the stenosis by serial radiography, and cured the woman completely by a duodenojejunostomy through the mesocolon—the first operation of the kind applied in Uruguay. The stenosis seemed to be secondary to a healed ulcer low in the duodenum, although there was no ulcer history.

Traumatic Osteomas of the Thigh.—Cunha reports three cases identical in origin and aspect. The large osteoma developed within four to six weeks after a kick from a steer or similar local trauma. The oval tumor extended beyond the middle third of the femur. The diagnosis had been osteosarcoma or syphiloma, but a partial operation in the third case confirmed the formation of layers of bony tissue in dense connective tissue in the muscle. Some roentgenograms are reproduced.

Test for Uricacidemia.—Sáenz and Haendel have simplified the usual technic. They mix 2 cc. of the serum with 2 cc. of a 20 per cent solution of trichloracetic acid, and filter. They add 2 cc. of the filtrate to 0.8 of the Folin-Denis reagent and 6 cc. of a 40 per cent solution of sodium carbonate. The tint of the fluid is then compared with that of a test tube containing 3 cc. each of Fehling I and Fehling II plus 2 cc. of distilled water. This serves as the colorimeter as it corresponds to a 0.01 per cent solution of uric acid treated as described. If the tints are identical, the blood contains 2 per cent of uric acid.

Lactic Acid in the Blood.—The research was done partly at Warsaw and partly at Paris, seventeen different species of animals being examined. In twelve men, the range was from 10 to 19.2 mg. per hundred cubic centimeters. In the animals, each species seemed to have a special average; in hogs the range was from 39 to 48.1. The highest figure (120) was in a crab. There was no constant relation between the lactic acid and the dextrose content of the blood.

Local Vaccine Treatment of Staphylococcal Processes.—Gauze impregnated with antistaphylococcus vaccine has been regularly applied to furuncles by Stajano and Hormaeche during the last year, with excellent results. One woman had had eighty furuncles in the course of a year, but under this local autovaccine treatment the pain was relieved and the processes aborted in a few hours, or suppuration hastened, and the cure of the furunculosis was soon complete. The list includes several cases of a furuncle on the face, but the effect was alike in all, frank suppuration and resolution in about twenty-four hours, or the process aborted in ten. The cultures of *Staphylococcus aureus* were made from furuncle pus and were killed with iodine or heat (55 C.)—about 10,000 millions per cubic centimeter.

Anales Soc. Mex. de Oftalmología, Mexico City

5: 73-96 (Dec.) 1925

*Teaching Writing to the Blind. D. M. Vélez.—p. 73.
Internal Secretions and Pathology of Eyes. De Jesús González.—p. 81.
Treatment of Secondary Cataract. A. F. Alonso.—p. 83.
Afferent Fibers in Corti's Ganglion and Other "Exteroceptors." I. Ochoterena.—p. 85.

Teaching Reading and Writing to the Blind.—Vélez describes a simple method which has been giving satisfactory results in the primary school for the blind in Mexico City for the last two years. The training is in letters of the ordinary type, not the Braille system which requires a specialized apprenticeship to use or read. The letters are outlined with a row of brass clips, such as are used to fasten together the pages of legal documents. A large letter A will require fourteen such clips, the rounded heads forming the outline of the letter as the right forefinger traces it. The card is held between the thumb and forefinger of the left hand, and these fingers, held the same distance apart, form a frame in which the blind person can draw the outline of the letter he has learned from the cards. Vélez is now studying a means to draw the outline of the letter with some sticky ink, such as a solution of sodium silicate, to which sand dusted over it would adhere. If this proves feasible, the letter drawn can be read with the fingers of the blind as well as with the eyes of the seeing. Children learn these brass clip-outlined letters readily, and reproduce them excellently, and thus are able to communicate with any one. The article is illustrated.

Archivos de Endocrinología y Nutricion, Madrid

4: 1-56 (Feb.) 1926

*Insulin in Suprarenal Insufficiency. G. Marañón.—p. 3.
Symmetrical Lesions of the Knees. G. Marañón and Bonilla.—p. 19.
Pituitary and Diuresis. Blanco Soler and Pardo.—p. 27. C'td.
Metabolism and Exophthalmos in Hypothyroidism. Blanco Soler.—p. 44.

Action of Insulin in Suprarenal Insufficiency.—Marañón noted in two cases of Addison's disease that the suprarenal insufficiency had evidently rendered the patients more susceptible to insulin. Ordinarily harmless doses (5 units) induced grave symptoms after an interval of three hours, convulsions, coma and death, all in a few minutes. Necropsy showed complete destruction of the suprarenals. In a second case, 10 units were followed by rapid and intense hypoglycemia that might have been fatal if sugar had not been injected at once and ingested. Tests of other patients confirmed the sensitization to insulin entailed by suprarenal deficiency. The physiologic treatment for insulin accidents seems to be with epinephrine. In fatal diabetic coma the suprarenals are generally found diseased. This fact should not be forgotten when coma persists after insulin has conquered the acidosis.

Gaceta Médica de Caracas

33: 65-80 (March 15) 1926

Intracardiac Injection of Epinephrine. Villegas Ruiz.—p. 65.
Postoperative Retention of Urine. Idem.—p. 66.
Experiences with Autohemotherapy and Autogenous Vaccines in Otorhinology. D. R. Iriarte.—p. 68.
*Mycoses in Venezuela. R. Medina Jiménez.—p. 69.
Vegetable Ferments. E. Noguera Gómez.—p. 76.
Therapeutic and Chemical Properties of Saponins. Idem.—p. 78.

Mycoses in Venezuela.—Medina Jiménez remarks that Venezuela offers a fertile field for study of pathogenic fungi. In the principal focus of mal del pinto, at the foot of the Andes, nearly the entire rural population is affected and the majority of laborers in the towns; in other regions, up to 10 per cent. The patches may be black, red, white or blue. He has encountered also cases of sporotrichosis, trichophytosis, mycetoma and an itching desquamating eruption restricted to the fingers and toes. He has cultivated the fungus responsible for this affection—which is known locally as sabañón—from the black mud of the shores of the plains rivers.

33: 97-112 (April 15) 1926

The Medicinal Plants of Venezuela. E. Noguera Gómez.—p. 98.
*Septicemia of Dental Origin. A. Bejarano Fuentes.—p. 102.

Septicemia of Dental Origin.—Bejarano Fuentes reports that a young woman had been having recurring fever for nine months, especially pronounced in the evening and night, with pains in the gums during the febrile periods. Complete recovery followed removal of an apparently sound tooth which proved to be infected.

Lisboa Médica, Lisbon

3: 169-216 (April) 1926

Modern Views on the Pathology of Pulmonary Tuberculosis. Pulido Valente.—p. 169.
*Calculi in Prostatic Urethra. A. Gomes.—p. 181.

Calculi in the Prostatic Urethra.—Gomes cites Rochet and Moutot to the effect that the formation of a calculus in the prostate is extremely rare; they were able to collect only fifteen authentic cases. He found radiologic evidence of a large calculus projecting from the bladder into the urethra, with signs of other calculi in the left kidney and pelvic ureter, in an adolescent. The bladder-urethra calculus was extracted by a suprapubic cystostomy. It was 8 cm. long and weighed 30 Gm. The left kidney was also removed, but the ureter calculi were not molested. The boy is convalescing smoothly. In another case, in a man aged 74, ten calculi were discovered in a diverticulum in the enlarged prostate, accompanying a large calculus in the bladder.

Prensa Médica Argentina, Buenos Aires

12: 1173-1204 (May 20) 1926

Blood Calcium and Its Regulation by Endocrines. Waldorp.—p. 1173.
*Palilalia as Sequela of Encephalitis. J. C. Vivaldo.—p. 1186.
A Hemogregarina in Iguanas in Argentina. S. Mazza.—p. 1192.

Speech Disturbances as Postencephalitic Sequelae.—A farm laborer, aged 27, developed ocular spasms and mental disturbances traceable to an attack of epidemic encephalitis two years before. A tendency to palilalia was marked, the patient repeating several times each phrase he spoke. There was no tremor although other signs of parkinsonism were pronounced.

Repertorio de Medicina y Cirugía, Bogota

17: 301-360 (March) 1926

Tuberculous Peritonitis of Unusual Form. Jenaro Rico.—p. 306.
Leprosy Masquerading as Rheumatism. Forero Rubio.—p. 312.
*Eye Affections of Dental Origin. E. Llamas.—p. 314.
The Bucuramanga Yellow Fever Epidemic of 1923. D. Hernández Bautista.—p. 334. C'td.

Ocular Affections of Unsuspected Dental Origin.—Llamas describes four striking cases in which extraction of teeth which proved to be infected cured symptoms of long standing. One woman had suffered for ten years from recurring rhinitis, headaches, rheumatism, chills and swelling of the feet, all of which permanently subsided within a month. In a case of corneal ulcer, with iritis and photophobia, the condition had been aggravated by tentative arsenical treatment but improvement began at once after extraction of some molars, as also in a case of intense pains in the eye with iridocyclitis, and in one of chronic smarting in the eyes and impairment of vision, with chronic tremor of the hands rebellious to months of institutional treatment. After removal of a tooth that had been bridged three years before, the symptoms, including the tremor, rapidly disappeared.

Revista de Cirugía, Buenos Aires

5: 145-192 (April) 1926

*Tuberculoma of the Transverse Colon. P. Chutro.—p. 145.
Torsion of the Greater Omentum. M. J. Vernengo.—p. 157.
Invagination Due to Meckel's Diverticulum. A. Buzzi.—p. 176.
Technic for Anterior Colporrhaphy. A. Gutiérrez.—p. 186.
Case of Blood Cyst in Liver. Jauregui and Etchégorry.—p. 189.
Visit to the Mayo Clinic's Experimental Farm. A. Fernández Saralegui.—p. 189.

Tuberculoma of the Transverse Colon.—Chutro has encountered seventeen cases of a tuberculoma of the cecum, and others in the terminal portion of the large intestine, but the case described here with numerous photomicrograms is the first in which the transverse colon was the site of the lesion. Symptoms of obstruction compelled intervention, and there have been no disturbances since the resection of that segment of the bowel. The man, aged 35, has gained 23 Kg. in weight during the year since. Cancer had been assumed at first.

Revista Médica de Barcelona

5: 433-528 (May) 1926

*Iodized Oil in Gynecology. F. Carreras et al.—p. 436.
*Radiotherapy in Whooping Cough. A. Pinós and J. M. Pujadas.—p. 447.
Operation for Imperforate Anus with Congenital Rectovaginal Fistula In Woman Aged 39. Ponjoan.—p. 454.
Various Deformities of the Face. A. Schüller.—p. 459.
*Vaccination Against Typhoid. P. Domingo and J. Vidal.—p. 465.
Present Status of Bacteriophage Question. Durán Reynals.—p. 469.

Iodized Oil in Gynecologic Exploration.—Carreras and two roentgenologists comment on the advantages of lipiodol in examination of the uterus and tubes, especially with inflammation in or around the adnexa. In one case of supposed cancer of the body of the uterus, the iodized oil revealed that the disturbances were due to didelphys malformation. Twelve instructive roentgenograms are reproduced.

Roentgenotherapy in Whooping Cough.—Pinós and Pujadas ascribe the prompt benefit from roentgen-ray exposures in whooping cough to the rapid transformation of lymphoid tissue into cicatricial tissue under the influence of the rays. In several cases they witnessed great benefit from one or two series of roentgen exposures. The hypertrophied tracheobronchial glands rapidly subsided to normal size under this treatment; it seems to be promising likewise in tuberculosis at the hilum, and for the same reason.

Antityphoid Vaccination by the Mouth.—Domingo and Vidal say that it is not necessary to administer bile with the vaccine as Besredka recommends. It is simpler and easier to mix the bile with the vaccine. After trying this technic on guinea-pigs and on themselves, they have been applying it to others, and none have contracted typhoid.

Revista Mexicana de Biología, Mexico City

6: 27-70 (March) 1926

*Quantitative Test for Albumin. A. de Avila.—p. 27.
Wrisberg's Nerve the Nerve of Taste. Ortega.—p. 34.
"Comparative Physiology of Domestic Animals." The Nerves of Taste. G. Colin, 1854.—p. 43.
Relations Between the Pituitary and the Diencephalon Centers in Macacus Monkeys. A. Vergara.—p. 47.
Some Little Known Animal Food Resources of Mexico. Reza.—p. 50.

Quantitative Test for Albumin.—De Avila recalls that alkaline solutions are able to dissolve a limited quantity of coagulated albumin. The albumin becomes dissolved always in a certain ratio to the strength of the alkaline solution. On these properties is based the technic described for volumetric titration of the protein in a fluid. He mixes 5 cc. of the fluid to be tested with 5 cc. of the acid precipitating solution (alcohol 50 cc., distilled water 45 cc. and 5 Gm. of trichloracetic acid). The mixture is distributed in five test tubes. To each tube is then added 1 cc. of a 2 per cent solution of potassium hydroxid previously tinted red with a few drops of a solution of phenolphthalein. Then the alkaline solution is added to each tube in amounts from 0.1 to 0.6 cc. The first tubes may remain turbid and the tint not change, but a tube is finally reached in which the protein is dissolved, the fluid becomes clear, and the tint becomes deeper. If the cerebrospinal fluid contains considerable protein, it can be diluted for the test, or the reagents be diluted.

Semana Médica, Buenos Aires

1: 741-792 (April 15) 1926

*Tuberculous Peritonitis. M. Pozzo.—p. 741.
Factors Which Influence Artificial Feeding of Infants. Garrahan.—p. 744.
Vibration Treatment. *O. C. Fernández.—p. 746.*
Treatment of Cleft and Perforated Palate. R. A. Crespi.—p. 755. C'tn.
*Induced Pneumothorax in the Pregnant. J. J. Viton.—p. 776.
"Ossification of the Eye." J. Lijó Pavia.—p. 777.
Obesity in Children. G. Marañon.—p. 780.
Leduc's Research on Plasmogenesis. A. L. Herrera.—p. 788.
The Future of the Medical Career.—p. 789. Buenos Aires Letter, p. 341.

Discrete Tuberculous Peritonitis.—Pozzo diagnosed the fibroid adhesive peritonitis from the roentgenograms. There were no shadows to indicate duodenal or pyloric disease. The urachus was large, hard and stiff; this reaction on the part of the urachus is as constant and as instructive in tuberculous peritonitis as the reaction of the vas deferens with tuberculosis of the epididymis. In the first of the two cases described there was an apical process besides; the clinical picture had suggested appendicitis. In the other case, the gallbladder seemed to be responsible for the symptoms, but in both the laparotomy revealed the plastic adhesive peritonitis, fastening the duodenum to the liver, or the gallbladder to adjoining tissues. Roentgenoscopy showed the characteristic arrangement of the intestines in planes, with gases and fluids forcing them apart, leaving triangular spaces. Drainage of the gallbladder apparently cured one of the patients, but he returned two months later with the same symptoms as before.

Artificial Pneumothorax in Tuberculous Pregnant Women.—Viton relates that he treated nine pregnant women with tuberculous cavities or ulceration in the lungs by inducing pneumothorax. This allowed the pregnancy to progress to a normal delivery, and the women were able to nurse their infants. The children all survived and thrived except one from an extra-uterine pregnancy. The mother in this case died, as also one in whom miliary tuberculosis developed. These were the only fatalities. Conception occurred in one of the women while she was still under the influence of the collapse treatment, and this second pregnancy ran a normal course also.

1: 793-844 (April 22) 1926

Inaugural Lecture of Syphilography Course. N. V. Greco.—p. 793.
Welfare Work for Infants and Children at the Rivadavia Maternity. *J. P. Garrahan.—p. 801.*
Acute Embryonal Leukemia. J. R. Goyena et al.—p. 806.
**Paralysis from Intraspinal Anesthesia.* P. Satanowsky.—p. 809.
The Publicity of Crime. D. E. Caravias.—p. 817.
**Organotherapy in Fowls.* P. Heredia.—p. 819.*
Meckel's Diverticulum. E. Stincer.—p. 825.
Sulphur and Catalysis. Armingeat.—p. 838.

Paralysis of the Rectus Externus from Intraspinal Anesthesia.—Satanowsky relates that intraspinal anesthesia has been applied in the last three years in Arce's service at 1,022 operations. There was slight headache in twelve cases, intense in nine, vomiting in five, syncope in three, and in six cases paralysis developed. It involved the arm, the body below the thorax, the oculomotor muscles or the peripheral portion of the facial nerve. The paralysis in the latter case came on suddenly. The outcome in this case is not mentioned, but the paralysis gradually subsided in the others described.

Organotherapy.—The research on fowls reported by Heredia seems to demonstrate that organotherapy acts merely as a substitution treatment. Continued too long, it checks the natural secretion of the organ in question, and this entails atrophy in time.

1: 965-1044 (May 13) 1926

*Infection with Gastric and Duodenal Ulcers. J. R. Goyena and J. Thenon.—p. 965.
Succession of Cancers with Long Interval. J. A. Gabastou.—p. 1010.
*Typhoid Skin Test. G. Rodriguez.—p. 1014.
Treatment of Small Hydronephrosis. R. Landivar.—p. 1018.
Knife Wound of Liver. Etchegoyen and Gorodner.—p. 1023.
*Some New Reagents and Reactions. M. I. Ygartúa.—p. 1024.
Changes in Leukocyte Count from Splenic Reflexes and Position in Regard to the Compass. J. Regnault.—p. 1031.
*Insulin in Eczema in Infants. E. Martinez Zuviria.—p. 1038.

Infection in Gastric and Duodenal Ulcers.—Goyena and Thenon state that in the sixty-six cases studied, the leukocyte count was above 8,000 in 56 per cent; 85 per cent of the patients had fever, and 48 per cent had both fever and high leukocyte count. In those without either, the signs of chronic adhesive peritonitis testified to the presence of infection, and perigastric inflammation was evident in certain others with moderate fever but no leukocytosis. Each case is summarized with much detail.

Skin Test for Susceptibility to Typhoid.—Rodriguez has found eight millions of bacilli the best dose for the intradermal test. He advocates it as a routine measure for soldiers vaccinated against typhoid, as it will reveal those still susceptible to typhoid, and enable revaccination in time. All those vaccinated a year before or who have had typhoid at any time, respond with a vigorous reaction. The allergy in these cases evidently represents a blending of immunity and hypersensitivity to protein.

Some New Reagents and Reactions.—Ygartúa describes a number of color tests useful in identifying a long list of drugs, including thymol, chlorides, bromides, sulphides, formic acid and menthol.

Insulin in Treatment of Eczema in Infants.—Martinez Zuviria has been much gratified by the improvement under insulin treatment of infants of the exudative diathesis type, with eczema or seborrhea, given systematic treatment with insulin.

1: 1045-1112 (May 20) 1926

*Vaccination Against Diphtheria. Tonina and Montanaro.—p. 1045.
Disability from Traumatic Bladder Lesion. Masciotra.—p. 1047.
Torsion of Pedicle of an Ovarian Cyst. N. C. Torres.—p. 1054.
Apparatus for Venesection. A. Astraldi.—p. 1055.
*Mosquito Prevalence Without Malaria. J. Alessandrini.—p. 1056.
Case of Intestinal and Urinary Amebiasis. J. R. Goyena.—p. 1075.
Classification of Constitutional Physical Types. F. Frassetto—p. 1087.
One or More Types of Malaria Parasite? Marchoux.—p. 1091.

Immunization Against Diphtheria.—Tonina and Montanaro have been applying the Schick test year by year in a certain school for weakly children. The first year they obtained a positive response in 62 per cent; the second year in 48 per cent, and the third year in 34 per cent of 372 children. They immunized with toxin-anatoxin this last year, and found the technic simple and the reaction restricted to a diffuse inflammation of the forearm and rise in temperature for two or three days, not keeping the child out of school for more than a day at most. They are now studying year by year the duration of the immunity acquired.

Anophelism Without Malaria.—Alessandrini's study of the reclaimed marshes in Italy suggests the possibility that the larvae of the mosquitoes become biologically altered by the more hygienic conditions of their new habitat. Although the number of mosquitoes is not materially lessened, yet they become more resistant, and no longer serve as intermediate hosts for the malaria parasites. The anophelism persists, but the malaria menace is growing less.

Siglo Médico, Madrid

77: 509-532 (June 5) 1926

*Phototherapy for the Eye A. Castresana.—p. 509
Syndrome After Skull Trauma, Suggesting Prefrontal Lesion S. Rubiano Herrera.—p. 512. C'cn.
The Fight Against Tuberculosis in Spain. J. Huerta Peña.—p. 516.

Phototherapy of Certain Ocular Affections.—Castresana uses an arc light, and reports the subsidence of tuberculous nodular keratitis in two cases under thirty-five to forty-two exposures. Also the cure of tuberculous sclerokeratitis in three cases, and the disappearance of a tuberculoma in one case. Two patients were much improved of five with advanced tuberculous uveitis, and tuberculous iridochoroiditis disappeared completely in another patient, vision increasing from 1/10 to 1/3 Tuberculin treatment was usually given at the same time. The results of phototherapy were particularly good in recurring hemorrhage in the vitreous in the young. A tuberculous origin is probable in the cases thus benefited; the blood was rapidly reabsorbed and vision restored to what it had been before the hemorrhage.

Beiträge zur klinischen Chirurgie, Berlin

136: 385-580, 1926

Cerebellopontile Angle Tumors. E Heymann.—p. 385.
*Surgery of the Sympathetic Nervous System. E. Hesse—p. 429.
Histology of Experimental Pseudarthrosis. A. Schmidt—p. 463.
Porotic Malacia Following Biliary Fistulas. E. Seifert—p 496
*The Electrocardiogram in Sympathectomy. M. Mandelstamm—p. 499.
Multiple Enchondromas W. Wollner.—p. 506.
*Surgery of Intestinal Tuberculosis. F. Fuchs—p. 514
Dislocation of Proximal Phalanx of the Finger. R. Proske—p 528.
Posterior Rectopexy in Rectal Prolapse. S. S. Kusmin—p. 544
*Roentgen Ray Treatment of Inflammations. A. Lukowsky.—p. 554.
*Malignant Tumors of the Bladder. L. Simon.—p. 565.
*Late Results of Operations for Torticollis. J. Nussbaum.—p. 573.

Surgery of the Cervical, Thoracic and Abdominal Segments of the Sympathetic Nervous System.—Hesse has performed extirpation of the cervical and thoracic segments of the sympathetic system twenty-nine times. The nerve was removed from the superior ganglion to the stellate and first or second thoracic ganglion inclusively. He discusses briefly a multiplicity of conditions for which the operation has been performed. In angina pectoris it rests on a firm anatomical and physiological basis, and is justified when all internal methods have been exhausted. A review of the literature shows that it is too early to form a definite judgment on its value in bronchial asthma, but it appears to him that the decision will be unfavorable. Horner's syndrome follows all cases of high sympathectomy.

The Electrocardiogram with Unilateral and Bilateral Sympathectomy.—Mandelstamm found no differences in the electrocardiograms made before and after removal of the sympathetic ganglions in two cases of angina pectoris and six of bronchial asthma.

Surgery of Intestinal Tuberculosis.—Fuchs reviews the cases of tuberculosis of the intestine seen in Hochenegg's clinic from 1904 to 1925. There were 116 patients; eighty-seven were operated on. In the majority of the patients the symptoms were those of chronic ileus. In sixty-one cases the operation was for stenosis. Unilateral ileocecal resection was performed twelve times, with successful results of from two to nine years' standing in seven patients, and one death. Total exclusion of the intestine was carried out on thirteen patients with three lasting successes. The twenty-nine entero-anastomoses gave five successes of from two to twenty years. The total mortality of operations for intestinal stenosis was twelve cases. Total exclusion brought about improvement of the local process in all. The initial symptoms of intestinal tuberculosis may be identical with those of acute or chronic appendicitis.

Roentgen-Ray Treatment of Inflammations.—Out of 123 cases of inflammation treated by the roentgen ray, Lukowsky saw surprisingly rapid healing in fourteen, more rapid healing than was otherwise to be expected in fifty-seven, no advantage in point of time of healing in fifteen, and no improvement in a group of thirty-seven cases. The conditions governing success or failure are not yet clear. The virulence of the infecting organism seems to be of importance here. The best results were obtained in furuncles and carbuncles, inflammation of the inguinal glands, abscesses of the axillary glands and arthritis deformans. Pain was relieved and the general condition improved in many cases. The dose used was 10-20 per cent of the erythema dose, filtered through 0.5 mm. zinc and 1 mm. aluminum. Tendon sheath processes, felons, deep seated soft parts abscesses, and chronic osteomyelitis with sequestra did not respond well.

Treatment and Prognosis of Malignant Tumors of the Bladder.—Of fifty patients with carcinoma of the bladder operated on in Simon's clinic from 1916 to 1923, twenty-four are alive, twenty-six have died. Of the latter, a radical operation was impossible in twelve. One half of those surviving have lived longer than five years. However, Simon has seen patients die of local recurrence seven, ten and twelve years after operation. In eighteen of those still living, one operation sufficed; in six repeated resections or electrocoagulations were necessary. The prognosis is much better for a papillomatous than for an infiltrating tumor. Every suspicious tumor should be treated as malignant. He employs electrocoagulation on all small, pedunculated, apparently benign tumors. For malignant tumors, he resects the bladder wall; resection of the mucosa alone is not sufficient. He operates extraperitoneally, if possible. The power of regeneration of the human bladder is very great. He cites a personal case in which all but the trigonum and ureteral openings with a margin 1 cm. wide was removed; in six months the capacity of the bladder was 200 cm.; at the end of two years 300 cm. Total excision should rarely be performed.

Late Results of Operations for Torticollis.—The experience of the Göttingen University clinic is that the transverse skin incision immediately above the clavicle gives the best cosmetic results. Of forty-seven patients reexamined by Nussbaum, an entirely satisfactory functional result was achieved in thirty-six. Of forty who presented facial asymmetry before operation, asymmetry was still present in sixteen; the result in this respect appeared to be independent of age at operation. Of forty-five patients who had scoliosis before operation, thirty-three still showed it in greater or less degree. Experience with the wearing of a correcting apparatus versus early physical exercises indicate that the former favors a correct position of the head, while the latter is best for straightening the spine. The two should therefore be combined.

Beiträge zur Klinik der Tuberkulose, Berlin

63: 385-630 (May 20) 1926

Surgery of Pulmonary Tuberculosis. H. Alexander.—p. 388.
Gas Metabolism in Tuberculosis. E. Brieger.—p. 403.
Habitual Hyperthermia. K. Brünecke.—p. 412.
General Symptoms in Tuberculous Children. C. Coerper.—p. 419.
*Surgery of Pulmonary Tuberculosis. H. Deist.—p. 424.
Tuberculosis of Lungs and Larynx. Giercke.—p. 436.
Chemotherapy of Tuberculosis. E. Guth.—p. 444.
*Prognosis of Exposed Infants. Harms and Seitz.—p. 461.
*Tuberculosis of the Third Degree. Harms and Wangrin.—p. 467.
Lime Foci in Adults. Ickert.—p. 483.
Water Wheel Murmur in Pneumothorax. F. Junker.—p. 497.
Open and Closed Tuberculosis. J. E. Kayser-Petersen.—p. 503.
Specific Treatment. K. Kerssenboom.—p. 515.
The Children of the Tuberculous. G. Klostermann.—p. 523.
Frequency in China Workers. F. Kreuser.—p. 530.
Unilateral Pulmonary Cirrhosis. W. Kühl.—p. 539.
Roentgen Irradiation of the Spleen. A. Neddermeyer.—p. 555.
Fat Gain in Tuberculosis. G. Pohl-Drasch.—p. 564.
Infraclavicular Infiltrates. F. Redeker.—p. 574.
Tuberculosis and Trauma. J. Ritter and W. Gerlach.—p. 601.
Copper Treatment of Tuberculosis. J. Ritter and G. Pohl.—p. 606.
Sanocrysin Treatment. Sachs.—p. 619.
The Primary Focus in the Lung. O. Wiese.—p. 622.
Pneumothorax on Both Sides. W. Schultz.—p. 627.

Complications in Surgery of Pulmonary Tuberculosis.—Deist observed aspiration pneumonia in one case of Sauerbruchs' thoracoplasty, and in two cases of exeresis of the phrenic nerve. The apex is ventilated chiefly by the diaphragm. The secretion accumulates and, because of the paralysis of the diaphragm, it may be forced into the healthy lung by a deep inspiration, especially if the patient has pains.

Prognosis of Exposed Infants.—Harms and Seitz found nearly 60 per cent infected of 129 infants and children exposed to tuberculosis. The infection occurred in 87 per cent of them in the first year of life. The tuberculosis proved fatal in 12.4 per cent of them (7.75 per cent of these died in infancy). The mortality was 23.9 per cent among the children infected during infancy. Tuberculous meningitis was the usual cause of death.

Duration of Tuberculosis of the Third Degree.—Harms and Wangrin estimate the average duration of chronic tertiary pulmonary tuberculosis from the first symptoms to death as four years and about two months. The grave pulmonary process itself lasts about two years. Hospital treatment may double this term.

Deutsche Zeitschrift für Nervenheilkunde, Leipzig

91: 1-160 (April) 1926

Syndromes from the Cerebral Ventricles. M. Rosenfeld.—p. 1.
Compulsive Movements in Hemiplegia. Schuster and Pineas.—p. 16.
Chloromas of the Dura. H. Rothschild.—p. 57.
Ataxia and the Posterior Columns. H. Stein.—p. 77.
*The Prognosis in Syphilis. R. Schmidt.—p. 128.

The Prognosis in Syphilis with Primary Negative Cerebrospinal Fluid.—Schmidt has investigated, years later, 155 cases in which at the first examination of the cerebrospinal fluid—before any treatment, or five years after the last treatment—the fluid had responded negatively to tests. At the later examination the response was still negative, in those tested, and there were no symptoms suggesting neurosyphilis in the seventy-one that had shown no neurologic symptoms at the first examination. In the fifty-seven that had presented signs of neurosyphilis, at first, the disease had not progressed. Of the twenty-seven with symptoms suggesting tabes at the first examination, only one had developed typical tabes, and in this case its hereditary nature was probable. The others presented only one or a few symptoms years later, and in some they were less severe than at first. A primarily negative cerebrospinal fluid thus has an important bearing on the prognosis later.

Klinische Wochenschrift, Berlin

5: 1065-1112 (June 11) 1926

Gastric Neuroses. G. Katsch.—p. 1065.
*Tophi and Gout. F. Gudzent.—p. 1069.
Disintegration of Tissue. W. v. Gaza.—p. 1072.
Insulin in Children. R. Priesel and R. Wagner.—p. 1076.
*Serodiagnosis of Tuberculosis. Neuberg and Klopstock.—p. 1078.
*Vital Staining of Erythrocytes. A. Cohn.—p. 1079.
*A Placental Endocrine Gland. S. Loewe and Voss.—p. 1083.
Proteus Bacilli. F. Neumann.—p. 1085.
Blood Pressure After Movements. E. Adler.—p. 1086.
"Work and Hyperthyrosis." L. Asher.—p. 1088.
Anaerobic Culture of Cholera Vibrio. J. Hirsch.—p. 1089.
Toxicology of Cyanamide. S. Glaubach.—p. 1089.
Antagonism of Trypanocides. R. Schnitzer.—p. 1090.
Cerebrospinal Fluid in Infants. A. Mader and S. Sänger.—p. 1090.
Tuberculosis and Cancer of Lungs. Hochstetter.—p. 1091.
Pes Valgus. H. Schulze-Gocht.—p. 1092.
Medicine in New Legislation. H. Zangger.—p. 1095.
Roentgen Teleangiectasias. F. Franke.—p. 1111.
Tryparsamide. R. Freund.—p. 1111.

Tophi and Gout.—Gudzent denies the causal connection between uric acid and the attack of gout. The tophi form and disappear sometimes without any subjective sensations. The acute attack of gout seems to be of allergic nature, and is induced by individually different elements of the food. One of his patients tolerated a synthetic alcoholic beverage although he could produce an attack by drinking a certain brand of champagne. The purin-free diet is not the last word in gout. The allergens are more important.

Serodiagnosis of Tuberculosis.—Neuberg and Klopstock dissolve tubercle bacilli by a 20 per cent solution of sodium benzoate. The antigen thus obtained seems to be as good as any other, without requiring a complicated preparation.

Vital Staining of Erythrocytes.—Cohn found supravital staining of blood a better aid in diagnosis of lead poisoning than the regular stain for basophilic stippling. He made parallel investigations on supravital staining, the presence of nucleated erythrocytes and the oxygen consumption of the blood. The results were frequently divergent—for instance, a low oxygen consumption in spite of the presence of normoblasts and a high oxygen consumption with a low percentage of supravitally stained erythrocytes.

A Placental Endocrine Gland.—Loewe and Voss discuss the significance of the high concentration of estrual hormone in the placenta. It is known that it is almost absent from the ovary during pregnancy. They point out that the overproduction of the hormone in the regular way would entail many undesirable effects in pregnancy, such as lactation, extreme hypertrophy of the breasts, hypererotization and other phenomena. A hormone produced in the placenta may act chiefly locally on the uterus. Their experiments (injection of the hormone in oil into one horn) demonstrate such a possibility.

Münchener medizinische Wochenschrift, Munich

73: 977-1016 (June 11) 1926

*Seasickness and Air-Sickness. O. Bruns.—p. 977.
Immunization in Syphilis. Hilgermann.—p. 979.
Postencephalitic Sleep Disturbances. G. Stiefler.—p. 981.
*Hyperventilation Migraine. O. Muck.—p. 982.
*Hysteria, Hyperpnea, Epilepsy. J. Lange and E. Guttmann.—p. 983.
Scarlet Fever Antiserum. K. Ochsenius.—p. 984.
Ectopic Pregnancy. J. Koerner.—p. 985.
Treatment of Hemophilia. H. v. Samson-Himmelstjerna.—p. 986.
*Diagnosis of Duodenal Ulcer. K. Trommer.—p. 989.
Tonsillectomy. O. Kessel.—p. 991.
"Etiology of Haff Disease." H. Selter.—p. 993.
Nephritis Uremia. C. R. Schlayer.—p. 995.
Thefts in Sanatoriums. F. Riss.—p. 998.
Typhoid in Prussia. Rimpau.—p. 998.

Prevention of Seasickness and Air-Sickness.—Bruns easily elicited the symptoms of seasickness by using Bárány's chair. He recommends a meal and a barbital sedative half an hour before the voyage begins. A horizontal position on deck near the center of the ship is advantageous. The stomach should contain some food all the time. Another dose of barbital may be given in five hours, and a third the next morning. If seasickness develops in spite of this, an injection of 1 mg. of atropine sulphate and slight constriction of the neck or a broad tight abdominal belt may help.

Hyperventilation Migraine.—Muck induced an attack of migraine in twenty-seven migraine patients by forced deep breathing

Hysteria, Hyperpnea, Epilepsy.—Lange and Guttmann conclude that hysterical attacks may become pacemakers for a true epileptic seizure, because they are usually associated with hyperpnea

Diagnosis of Duodenal Ulcer.—Trommer uses the duodenal tube for diagnosis of ulcers of the duodenum With an ulcer, the contents are acid, there is a considerable amount of mucus, some leukocytes, and more albumin in the first fluid than in that produced by infusion of dextrose. Small quantities of blood are usually present. The liver function is normal With a carcinoma of the pylorus, the blood may be hemolyzed and the duodenal contents are alkaline.

Wiener klinische Wochenschrift, Vienna

39: 709 740 (June 17) 1926

Treatment of Peptic Ulcer A Eiselsberg—p 709. C'td.
*Cholecystography K Presser—p 713
Epidemic Encephalitis and Epilepsy C Triminakis—p 717.
*Duodenal Fluid After Splenectomy D Simici and D Popesco—p 718.
*Colloidal Gold Test T Ehmer—p 719
Tuberculosis Sanatoriums A V Frisch—p 720
Respiratory Sounds A Winkler—p 723 C'cn
Gastric Achylia W Zweig—p 726
Basal Metabolism in Research on Specific Dynamic Action of Foods. H Schur Supplement—pp 1 30

Cholecystography.—Presser discusses the advantages of the administration of the contrast substance by the mouth or by the vein The former method is to be recommended in outpatients and is sufficient if the shadow of the gallbladder appears to be normal.

The Duodenal Fluid After Splenectomy.—Simici and Popesco examined the duodenal fluid from a man whose spleen had been removed because of abdominal trauma The bilirubin concentration of the duodenal fluid, shortly after the splenectomy, was only about one seventh of the normal The Meltzer-Lyon test did not induce any change in the color. Three months later the bilirubin content was normal, and the Meltzer-Lyon test positive

Colloidal Gold Test.—Ehmer confirms Krebs' investigations on the importance of the hydrogen-ion concentration (optimum p_H 6 2 according to Mayr) of gold sols She publishes her way of preparing the colloidal gold solution for the test.

Zeitschrift für Immun. u. exp. Therap., Jena

47: 1 96 (April 8) 1926

*Nature of the Bacteriophage W Gohs—p 1
Complement Fixation in Rabbit Trypanosomiasis Chu jen Ku—p 17.
Agglutination of Enterococci K Meyer and H Lowenstein—p 39
Hemagglutinins in Plants M Eisler and L Portheim—p 59
Stain for Spirochetes in Sections J Lukes and V Jelinek—p 83
No Activation of Quinine by Lipoids W N Asbelew—p 89

Nature of the Bacteriophage.—Gohs explains anaphylaxis on the basis of ferment action The cell ferments are diverted from their normal functions owing to adsorption by the parenterally introduced substance, and the result is an acute shock or chronic toxic action from the products of disintegration Anaphylaxis can be induced not only by antigens but by substances like kaolin, which adsorb the cell ferments He presents arguments to show that the d'Herelle phenomenon of bacteriophagy is anaphylaxis in bacteria

Klinicheskaya Meditsina, Moscow

4: 81 123 (March) 1926

Disturbances of Digestion and Nutrition in Infants S Fedynsky—p 81
Postoperative Gastrocolonic Fistula H Strauss—p 85
Anaphylaxis a Physical Chemical Process L Zilber—p 86
Classification of Joint Affections A Kessler—p 89
*Drop Wrist Percussion B Egoroff—p 91
Syphilis of the Stomach A Seltsovsky—p 92
*Action of Blood Serum on Hemolysins R Antonova—p 96
Secretory Activity of the Pancreas R Antonova—p 98
Lambliasis of the Duodenum A Belaeff—p 102
Etiology of Extra Uterine Pregnancy S Kisin—p. 104
*Operations on Nerves for Cancer N Samarin—p 105
Functional Rehabilitation in Motor Disturbances Verboff—p 108.

Drop-Wrist Percussion as Adjuvant in Outlining the Stomach.—The percussion is performed by tapping lightly on the relaxed abdomen with the joined tips of the four fingers. The blows are sharp and short, the wrist completely relaxed, the wrist rebounding to a right angle immediately after each stroke. With this method, splashing and tympany are easily heard over the stomach At the same time, the palpating fingers as well as the whole wrist perceive a special sensation resembling that from an air cushion. The elasticity differs from that over the intestine The percussion starts above the pubis, and is gradually continued to the epigastrium, and over Traube's space. The patient is, of course, reclining An illustration shows the exact technic This percussion, affording a combination of auditory and tactile impressions, may help, Egoroff says, more than any other in determining the exact size and position of the stomach.

Inhibiting Action of Blood Serum on Autohemolysins of Duodenal Juice.—Antonova studied the action of 112 human blood serums on the duodenal contents from man or dogs. The serums belonged to patients chiefly with stomach disease, or with infections, such as relapsing fever or malaria. There was evidence that blood serum has an inhibiting action on the autohemolysins of the duodenal juice and the pancreatic juice. The inhibiting property was reduced in inactivated serums. The degree of the antihemolytic action of the serums seemed to vary somewhat in different affections. It was notably pronounced in acute infectious diseases

Molotkoff's Neurotomy and Radicotomy for Malignant Tumors.—Molotkoff's method is based on the theory that cancer may be due to trophic disturbances, and that the seat of the trophic nerves is in the posterior roots and sensory nerves Therefore, the operation consists in severing the corresponding roots or nerves Samarin applied this "biologic surgery" in sixteen cases of cancer. Direct removal of the tumor was impossible In eleven, the cancer was in the esophagus The results were negative in all, except that severing the vagus sometimes facilitated swallowing in patients with malignant stricture of the esophagus.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

1: 2833 2936 (June 26) 1926

Liver Abscess After Appendicitis P M de Planque—p 2834
*Tumor in the Mandible J G Schuiringa and P R Michael—p 2838.
*Masked Jaundice with Duodenal Ulcer A Haak—p 2849
*Blood Groups of Cancer Subjects S G T Bendien—p 2856.
*Research on Twins P J Waardenburg—p 2859
Three Cases of Tetanus with Recovery Huese—p 2868
Case of Weil's Disease Without Jaundice Lampe.—p 2870
Transplantation of the Urethra into the Anal Sphincter in Case of Total Incontinence from Epispadias Schouten—p 2929

Treatment of Tumors of the Mandible.—Schuiringa and Michael describe three cases, with illustrations, which demonstrate the advantages of refraining from the use of the customary temporary rubber prosthesis at once after resection of the bone of the lower jaw. Instead of this, they apply a device to form an inclined plane on which the upper teeth slide This counteracts the tendency to retraction and further deformity When conditions do not allow this, a simple prosthesis attached with springs to the upper teeth, with cheek protectors, answers the purpose.

Masked Jaundice with Duodenal Ulcer.—Haak applies this term to conditions with high bilirubin content in the blood serum although there is no visible jaundice. His experience with the cases described suggests that with severe and recurring pain in the right upper abdomen and high urobilinuria, the gallbladder should not always be incriminated; the possibility of a duodenal ulcer should be borne in mind, especially if there is much bilirubin in the serum One of these patients six months before had had a three weeks' attack of frank jaundice In five other cases of duodenal ulcer, the bilirubin content of the serum was within normal range. In another case, the woman, aged 42, had had recurring attacks of pain. They came on suddenly at night in the stomach region, spreading to the right side The appetite was good and the pain did not seem to be connected with the meals. This condition continued for years, gallstone disease being assumed.

Then came a severe melena which suggested a duodenal ulcer as responsible for the disturbances. In one of his operative cases, the bilirubin content of the serum was 1.44 before the operation and 1.1 five months later. No signs of gallstones or obstruction were discovered. The chloroform at the operation seemed to have depressed liver function, as there were symptoms of hepatic insufficiency for ten days. Haak accepts this as a warning to give dextrose by the vein or rectum before any intervention in cases with bilirubinemia from any cause.

Blood Grouping of Cancer Patients.—Bendien reports that among 110 cancer patients examined, 17.3 per cent belonged to Moss' group I (Jansky IV); 42.7 per cent to group II; 16.4 per cent to group III, and 23.6 per cent to group IV (Jansky I). Compared with Weitzner's figures, and with the normal 5 per cent in Jansky Group IV and with the normal 45 per cent in Jansky group I, a certain predisposition to cancer of certain groups is suggested, if confirmed by a larger material.

Research on Twins.—Waardenburg often found the finger prints so closely alike in his research on twenty-five pairs that he was able by this alone to distinguish between the univitelline and the bivitelline twins. On the other hand, it is not always possible to tell from the fetal membranes whether there was one ovum or not. In one pair of twins with striking resemblance, one had nystagmus, the other not. The parents were normal in this respect but the mother's grandmother had had nystagmus. In another pair of identical twins, one had numerous nevi, including a huge hairy one on the back, while the other had no appreciable nevi. Another pair both present squint, but one in the right, the other in the left eye. Two twin girls, now aged 14, have a gap in the row of upper teeth, alike in both but on different sides.

Acta Obstet. et Gyn. Scandinavica, Helsingfors

4: *249-420, 1926*

Relative Weight of Fetus and Placenta. H. Westermark.—p. 249.
Ileus After Cesarean Section. P. Häggström.—p. 286.
*Treatment of Melena in the New-Born. P. Wetterdal.—p. 337.
Treatment of Chronic Adnexitis. F. Holtz.—p. 347.
*Influence of Age on Labor. G. Lundh. *Supplement.*—pp. 1-151.

Treatment of True, Idiopathic Melena in the New-Born.—Wetterdal found a record of 47.4 per cent mortality in the fifty-seven cases in which treatment was only symptomatic, in the last twenty years in two Stockholm maternities. It was 28.5 per cent in the eighty-four cases in which gelatin was injected; 14.3 per cent in the twenty-one with transfusion of blood, and also in the fourteen in which both transfusion and gelatin were used. From one to seven injections of gelatin were given, and twenty-seven died of the sixty-three thus treated. The experiences related emphasize the necessity for prompt measures, and the advantage of beginning with transfusion and following with gelatin. Feeding does not seem to aggravate the bleeding, and it should be kept up, and dehydration combated.

Elderly Primiparas. — Lundh's analysis of 7,000 first deliveries, 1900-1922, confirms that the duration of labor increases progressively after the age of 25. Complications become more frequent, especially eclampsia, but the age of the mother does not seem to influence the size or sex of the children. Twin pregnancies were more common with advancing age. The morbidity and mortality of the infants were also higher.

Hospitalstidende, Copenhagen

69: 413-436 (May 6) 1926

*Cystoid Pneumatosis of the Intestine. E. Holm.—p. 413.
*Radon Treatment. H. Jansen.—p. 429. C'cn.—p. 437.

Gas Cysts in the Intestines.—Holm remarks that it is more than a coincidence that cystoid pneumatosis has been associated with gastric or duodenal ulcer in more than half of the known cases. In other cases, gastric cancer, tuberculous peritonitis or gastro-enteritis brought the patients to the physician. He reiterates the warning to refrain from a direct radical operation on the pneumatosis, as it is liable to subside completely spontaneously, or after a laparotomy for other cause, or mere exploration. The prognosis is thus good as a rule, although if the cysts are large, there may be stenosis. In Faltin's case, the segment of the intestine most affected was excluded, thus curing dyspeptic disturbances of ten years' standing with symptoms of stenosis toward the last. Two weeks later the abdomen was opened to complete the resection, and the entire crop of cysts had disappeared. In Urban's case, the peritoneum kept filling with air, which had to be tapped for two months, but then all symptoms disappeared and the boy, aged 13, has developed normally since. The majority of these patients are middle-aged men.

Radium Emanation Treatment.—Jansen reports that 120 patients were treated in the Emanatorium in 1923-1925, with improvement in 60 per cent, predominantly of a subjective nature. It was especially striking in 67.5 per cent of the forty neurasthenics, and in thirteen of the fourteen patients with gout. He emphasizes that emanation treatment is merely an adjuvant. There was a decided transient reaction at first in almost every case, the symptoms growing temporarily worse. This testified against the effect being due merely to suggestion. Only three showed any benefit in the fourteen with cardiovascular disease, but 65.5 per cent were improved of the sixty-one with joint or muscular affections.

69: *461-484 (May 20) 1926*

*Treatment of Roentgen-Ray Injury of the Skin. A. Reyn.—p. 461.

Finsen Light Treatment of Roentgen-Ray Injuries of the Skin.—Reyn has found the Finsen concentrated arc light effectual in treatment of roentgen-ray ulcerations, atrophy and other forms of injury from these rays. In his twenty-one cases the lesions had been absolutely rebellious to all other measures. Four patients did not complete the course (including two with advanced rectal cancer), but thirteen of the other seventeen were cured. Three are still under treatment, and in one case the lesion was resected into sound tissue with plastic repair. The mercury vapor light seemed to aggravate the lesions, but under the Finsen light they healed, the skin smooth and elastic. The interval since is eleven years in one case. The roentgen exposures had been given for eczema, nevus, menorrhagia or after an operation. In some of the patients the ulceration had developed at once, in others not until long after. The Finsen course has to be cautious and long.

Ugeskrift for Læger, Copenhagen

88: *577-596 (June 17) 1926*

*Gastric Achylia. K. Faber.—p. 577.
Coiling of Umbilical Cord Around Neck of Fetus. Harsting.—p. 581.
Whooping Cough Vaccine. S. E. Kofoed.—p. 585.
Zinc Chloride in Treatment of Lupus. Rendtorff.—p. 588.

Etiology and Pathogenesis of Gastric Achylia.—Faber presents an array of evidence to prove that the gastric mucosa and secretory apparatus respond to infections and intoxications like other parenchymatous organs, especially the kidneys and the liver. These practically exogenous causes are observed so often and in such variety, that there is no need to call on a constitutional, congenital or nervous basis. The recuperation of function by the gastric glandular system in certain cases, with subsidence of the achylia, disproves the assumption of atrophy. The gastritis responsible for the achylia is not a mere catarrhal affection; it is disease of the gland parenchyma and of the parenchyma of the entire stomach. The ability to recuperate is most pronounced in the young, and it grows less not only with advancing age but with the duration of the gastritis. His microscopic studies of normal stomachs with achylia showed a tendency in the stomach epithelium to become transformed to an intestinal type; this was pronounced in 75 per cent while nothing of the kind was apparent in twelve normal stomachs examined. Experiments on animals showed that it is possible to influence the functioning of the gastric glands and induce achylia by isolating the stomach from its innervation, but the achylia was always transient; chronic achylia could not be induced by this means. On the other hand, it proved possible to induce chronic achylia by irritating the mucosa with alcohol or with diphtheria toxin by the vein or other exogenous injurious agent.

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BIOLOGIC PREPARATION FOR STUDY OF MEDICINE AND DENTISTRY *

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If we are to get any critical conception of what should be the aim in the ten to thirteen years of high school, college and professional school preparation of students, we must first get a clear idea of the major requirements in the subsequent careers of these students. I believe that in this particular the teachers in undergraduate colleges have a somewhat hazy appreciation.

What are the characteristics and capabilities demanded of the practitioner of medicine and dentistry? There are many, but from them stand out a few that are paramount.

SOME REQUISITES FOR PROFESSIONAL PRACTICE

First of all is intellectual honesty. The practitioner must be scholastically and professionally honest with himself and with his clientele. He not only must know well what he knows, but he must be cognizant of what he does not know. He must appreciate clearly and acknowledge his own limitations of knowledge and skill, in order that he may seek help. Any other attitude constitutes a menace to his patient.

Ordinary honesty may be innate or, more usually, it comes from family training; but intellectual honesty is largely acquired in the course of school training. Especially do science courses offer opportunity for its acquisition. In such courses conjecture and bluffing must be abjured, intellectual indolence proscribed, and the student led to base his conclusions only on facts established, as far as possible, by his own observations, and then taught to be willing to admit when he does not know a thing.

A second requisite demanded of the practitioner is ability to observe accurately, analytically and in an orderly fashion. He must be able to separate the salient facts and conditions from those that are only incidental. He must be able to correlate his observations and get them into a proper order to be used in arrival at correct deductions. These observations are not alone visual but also auditory, tactile and, to a less extent, olfactory and gustatory. His personal observations must be supplemented by information acquired through inquiry. Hence the receptive senses must be carefully trained, to which must be added a critical attitude of mind and a sense of proportionate values that will enable him to evaluate evidence properly.

A third requisite is the ability to solve problems. Every patient is a problem. To be sure, many of the patient problems are closely similar; but new ones constantly arise and obscuring factors continually intrude, while unfamiliar combinations afford puzzles that must be solved. Hence the practitioner must, following careful observation and the evaluation of evidence, be able to make correct deductions and to reason from cause to effect and inversely from effect to cause. This requires careful and accurate thinking, something that is not innate but must be acquired by careful handling of whatever subject matter is used for training.

A fourth type of ability that the professional practitioner must have is in the field of acquiring information. This type of ability is more easily and more quickly acquired than either of the three others I have mentioned. It cannot be all a matter of memory but must also include ability in securing information; i. e., a knowledge of literature in the especial field at issue. The acquisition of intellectual honesty, power of observation, and ability to solve problems all require an early beginning and continuity of effort. The acquisition of information may be secured with less lapse of time and is not as intricate a process. It is not as high a test of intellectual ability as are the others, and if these other capabilities are possessed they will assist, not only in acquiring information, but also in understanding it, which is far more important.

THE PROBLEM OF PREPARING MEN FOR THE MEDICAL AND DENTAL PROFESSIONS

The problem of preparing an individual for a successful and useful professional career is a continuous problem from the grade school onward to entrance into professional practice. In this, educators have usually made a fundamental educational error and have considered the education in the secondary school, in the college and in the professional school as three separate entities. They are not. Through them all runs a single motif. To be sure, it is differently developed in each of these three types of educational institutions; but the whole progress from entrance to high school to entrance in the profession is a single process, and when so treated will greatly add to the effectiveness of the entire educational and professional career.

We are not yet ready to bring the secondary school into this problem, but I believe we can fruitfully discuss the part of the college and the part of the professional school in this joint problem. To that end I want to take up the part of each group in respect to the training of the student in those four types of capabilities which I have selected as of outstanding need to the practitioner of medicine or dentistry.

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* Read before the Ohio Academy of Science, Columbus, April 10, 1926.

I shall take first the one last mentioned; namely, giving the student his informational armamentarium. Time does not permit discussion of the entire problem, and therefore I shall restrict myself chiefly to the information that lies in the field of the biologic sciences, since both medicine and dentistry are, in large part, applied biology, to which is appended a certain amount of mechanical skill in surgery and in operative dentistry.

The information that is used in professional practice is almost entirely of a type that must be expounded in the courses in the professional schools; therefore the courses in the undergraduate college do not have much responsibility in presenting information to be directly used in professional practice. This responsibility must chiefly be assumed by the professional schools.

Nevertheless, the teaching in the professional school must be largely built on a scaffolding of information acquired in the undergraduate college. This is a foundation and on it is built the superstructure that is of direct use in the professional career. Along with this foundation of biologic and other information in the sciences should be acquired much that is ancillary and of use to the physician or dentist, not so much for direct utilitarian application to his technical professional practice as to his relations as a citizen and fellow man.

BIOLOGIC INFORMATION THAT SHOULD BE ACQUIRED IN COLLEGE

Disease is chiefly disfunction; but, in function, structure is a dominant factor, and chronic disease is frequently due to abnormality of structure accompanying abnormal function. Neither abnormal structure nor abnormal function is a factor of the organism as a whole, nor of the organs nor even of the tissues, but may be resolved ultimately as far at least as cellular units, and the summation or resultant of the structure and functions of the constituent cells in the aggregate form the observed phenomena.

Hence the basis of both normal and abnormal structure and function lies in the cell. It should be apparent that information and understanding of the structure and function of the cell is the very foundation for any one who contemplates either medicine or dentistry.

Twenty-five years of observation of medical and dental students in my classes coming from colleges of all parts of the country, but largely from Ohio, convinces me that the chief deficiency of these men in biologic information is lack of knowledge of the cell. Such simple things, to mention only a few, as the difference between the wall of plant cells and the cell membrane and ectosarc of animal cells, the fundamental and derived shapes of cells, the fundamental properties of protoplasm, the regulative function of the nucleus, the relation of cells to their products in the composition of tissues, seem to many, even to most students, as unheard of novelties. Two thirds of my students state that they never heard of polarity of cells. At least a third of them affirm that they have never seen a mitotic figure except in textbooks, charts or blackboard diagrams. When it comes to the functions of cells, most of these students are limited in their knowledge to ameboid movement, ciliary action and intracellular circulation of protoplasm in plant cells. Many students have not even seen this much, their entire conception resting on their acquaintance with nonliving or at least inactive cells.

I believe I know the procedure that brings this result. What cytology is given in the usual undergraduate course in biology is given in the first days of the introductory course, when the student is a novice in observation and in biologic comprehension. This meager acquaintance is soon obliterated by the mass of new information in the courses, and the student never returns to anything but incidental study of the cell. It appears to me that the student who plans to use his biology, and especially those who expect to enter on a medical or dental course, should have, in some of the advanced courses, a review of the main facts of cell structure and function. Such a review should be more than a didactic consideration, and should include laboratory work covering a considerable variety of cell types and some of them living. After dealing with many organisms, all composed of cells and their products, the student will be able to appreciate and understand the cell as itself in a way utterly impossible in the first days of his first course in biology.

The one great need of students entering the professional schools is a comprehension of the fundamental facts of cell structure and function, and their differentiation. They do not bring this preparation to their professional school study.

If a student is to be taught to observe, he must be able to use the especial instrument of biologic observation. It no longer surprises me, as it did in my early years of teaching, when, on the first day we issue microscopes in the histologic laboratory, I see two or three men out of seventy-five attempt to use the microscope with the open part of the base turned toward them. Several in each class do not know the difference between an objective and an ocular; a third of the class know knothing about focal distance or focusing; and the great majority know nothing about substage condenser, use of mirror, or use of iris diaphragm in controlling light.

Inquiry shows that some students have never handled a microscope, their acquaintance with the instrument having been confined to looking at demonstrations set up by the instructor. For a considerable number, use of the microscope has been restricted to the early days of an elementary course, when they studied a few unicellular organisms.

We cannot expect the students entering the professional schools to know the optical theories and formulas involved in the microscope, or the mechanical details of the construction of the instrument, but we do believe that the undergraduate courses in biology should send us men with a working knowledge that will permit effective use of the microscope from the outset.

The undergraduate course in biology should give the preprofessional student a knowledge of the fundamental facts of vertebrate structure and function of the several organ systems of vertebrates. By this I certainly do not mean the structure of man, or even mammalian structure, but those common vertebrate characteristics, such as coelom, axial and appendicular skeleton, circulation, excretion and tropisms. One of the unfortunate tendencies in professional schools is to make everything anthropomorphic; and if the student is to get any comprehensive and comparative idea of man in his structural and functional relations to other vertebrates, he must get a firm basis of vertebrate anatomy in the undergraduate college.

This can best be given by a course in comparative vertebrate anatomy rather than by a course in mammalian anatomy. In such a course at least three forms should be carefully considered, not as separate entities, but with especial emphasis on comparative relations, with more attention to the quality of the course than to an extension of scope. Three forms well done are far better than four or five superficially done, and in these major emphasis should not be put on the mammals. For choice of forms, an elasmobranch, a urodele and a mammal seem best. An anuran, a chelonian or a bird are too highly specialized to fit into the picture unless the course covers two semesters, but the student should come to the professional school with a familiar grasp of the classification and characteristics of the classes of vertebrates and the larger groups of each class, including knowledge of the characteristic structural differences of the major groups. It is surprising to find students who do not know the difference between urodeles and carnivora, though if one cites as examples a mud puppy and a dog they will realize that there is some difference in the external appearance at least.

Comparative vertebrate anatomy gives an admirable opportunity to teach the correlation of structure and function, including change of function and progressive specialization. It must be borne in mind that in the earlier years of the professional course there is a growing tendency to clinical applications that are largely functional. Physiologic anatomy is rapidly replacing purely morphologic consideration, and the undergraduate courses in biology can do much to accustom the student to think of structure and function as inseparable; but care must be taken to avoid the tendancy to teleologic reasoning that leads a student into the habit of stating that a given structural condition is for the purpose of performing some stated function.

The undergraduate courses in biology should give the preprofessional student a good grounding in the salient points of biologic philosophy. The professional student needs to know the main arguments and conclusions regarding evolution, heredity, mendelism, physiologic division of labor, the fundamental law of biogenesis, sexual dimorphism, parasitism, metamerism, differentiation, and some others that will occur to every teacher and which can be taught in connection with any of several types of courses both zoological and botanic.

There are, to be sure, a great many courses lying between cytology and comparative vertebrate anatomy that are of value to the preprofessional student, some of them essential intermediate steps; but in general it is unwise to give courses that anticipate the courses that lie in the province of the professional school. Such subjects as pathogenic bacteriology, mammalian physiology, microscopic anatomy of mammalian organs and human anatomy had better be left to the professional school and the time given to subject matter that cannot be treated in the professional school.

CAPABILITIES REQUISITE FOR PROFESSIONAL PRACTICE

So far I have discussed only the matter of informational training, in which field the undergraduate college and the professional school have somewhat different responsibilities. I now come to the training in those three other selected requisites of the professional career, namely, intellectual honesty, ability in observation, and power to solve problems. In these the teachers in undergraduate college and the professional school have a common and joint responsibility. The problem is one of continuity, although the subject matter used in the training may be somewhat different. In fact, almost any field of science offers opportunity for effective training in these capabilities. Chemistry, physics, geology or even mathematics, each affords admirable material, but I shall consider the especial opportunities that lie in the biologic subjects.

TRAINING IN INTELLECTUAL HONESTY

By training in intellectual honesty, I do not lay great emphasis on argument against such crudities as cheating in examinations, or copying or faking laboratory records. While these are highly immoral, they so thoroughly convict the perpetrator of asininity that they should immediately exclude him from entrance to a professional career on the basis not only of immorality but also of incomprehension. Such practices may deceive the instructor, but much more disastrously they also deceive the person who is guilty of them, for thereby he secures a false rating by his instructor, a status that he cannot live up to, for he has secured the record but not the substance and by his own hand has inserted a flaw in the foundation of his intellectual training that sooner or later must cause the whole superstructure to crash.

If any phrase can serve as a slogan of intellectual honesty, it is "know thyself." The beginning student in any subject is usually incapable of critically judging the true value of his accomplishment in a course. He must therefore rely on the more mature judgment of an experienced teacher. Hence the elementary courses demand teachers of longest experience and best judgment. Here the teacher often fails in his duty and does not give the student the benefit that is due him. This frequently is brought about by too high grading, due either to generosity in scoring or to tests that are so easy that they fail to differentiate the good, the indifferent and the poor students from one another. Every class of students has men of different capabilities, and final estimates should show a considerable range. The teacher who finally grades all his students very high is equally culpable with him who grades them all low.

The teacher must be critical if he expects the student to develop in himself the ability to differentiate between high and low grades of accomplishment and himself know when he is doing things well or poorly.

There is probably no more valuable exercise in training a student's appreciation of his own capability than taking properly set examinations; and when a teacher excuses a student from an examination he robs that student of the one exercise in the course that is of highest value to the student himself.

When, through judicial criticism by the teacher, the student has learned the elements of evaluating himself, then the student must, by argument and persuasion, be led to acknowledge his deficiencies and seek to repair them. He should be taught that acknowledged ignorance is not nearly as culpable as unacknowledged ignorance. He should be taught that to answer a question by the frank statement that he does not know is better policy than to bluff or conjecture, for the former attitude will lead the student to seek the knowledge and make his teacher eager to assist him to get it. These qualities may be developed in courses in any subject; but biologic subjects, especially in their laboratory phase, are fruitful in this respect if rightfully handled by instructors that are willing to answer questions, or, better yet, to suggest avenues by which the student may himself arrive at correct conclusions. The latter method is of course the only one to be used with the student who is intellectually indolent.

TRAINING IN OBSERVATION

Since both medicine and dentistry are largely applied biology, the members of these professions are especially in need of training in the biologic type of observation. This is a complex process, for it includes not only the phenomenon observed but coincidentally a mental correlation of the structure and function, both normal and abnormal, and the continuity connected with the specific point at issue. It means that accompanying the *observation one must think biologically and consecutively*.

There is no type of undergraduate courses in which this facility can be developed except in those in the biologic sciences, and hence these courses stand out preeminent in the professional college training.

Biologic observation is quite different from the general type of observation. The student must learn to be discriminative, for he must be so in his profession, and the biologic courses give the best field for training in critical and discriminative observation. In physics can be taught accuracy through the reading of instruments, repeated to eliminate personal error and reduce range of probable error; but in this work there is little discrimination since the observation is, instead, intensive on some limited thing. In general and quantitative chemistry, reactions are pretty definite and usually isolated; and here, as also in quantitative chemistry, reactions can be repeated under conditions so nearly identical as to give almost conclusive evidence. Both physics and chemistry are excellent means of training in accuracy, but less fruitful in training in discrimination.

On the other hand, in biology, cells, tissues, organs and organisms are always variable, and, moreover, often an individual unit cannot be actually entirely dissociated from similar and surrounding units; hence observation must be extremely critical and discriminative if it is to approach the accuracy that is much more easily attainable in physics and chemistry.

The matter at issue must be dissociated from its surroundings by the mental processes of the student. The instructor cannot see with the eyes of the student and so must depend on individual quizzing in the laboratory, on discussion and on the graphic records of laboratory observations to ascertain just what visual and mental impressions have been received by the student. The quality of the graphic laboratory records is usually a good index of the quality of observation by the student.

Biologic observation is something more than looking at and seeing an object. It involves a mental process into which enters not only form and structure but also the correlation of these with function, relations to surrounding structures, a mental comparison with similar but not identical structures, and some conception of development and differentiation by which the observed conditions arose from simpler and more general preliminary relations.

This critical and discriminative type of observation is of the highest importance in medicine and dentistry. It is both an analytic and a synthetic faculty, and, next to intellectual honesty, with which it is intermingled, is absolutely essential to a high degree of professional efficiency. For its acquisition we must depend almost entirely on the training acquired in courses in the biologic sciences, either in the undergraduate college or professional school, or in both.

The product of the colleges, as it comes to the professional school, shows great deficiency in the quality of accurate, critical, discriminative observation. These students are satisfied with general impressions, which is almost a synonym for total ignorance. They proceed by a sort of intuitive process rather than by making an analytic attack. The result is that a large part of the effort in the earlier years of the professional school must be spent in initiating the student into proper observational procedure, and because of this much of the information so desirable for the use of the student in his clinical courses and in the practice of his profession cannot be presented to him.

Inquiries from students convince me that the deficiency in ability to observe critically and with discrimination is a result of the fact that most college courses in biology aim primarily at giving information rather than at mental and intellectual training. The wealth of material of the deepest interest, because of novelty and interrelationships, leads both student and teacher to be content with superficiality, to aspire to quantity rather than to quality.

The power of critical observation may be gained in any one of the variety of laboratory courses which are offered in biologic subjects; but that it should be gained in some of them is highly desirable. If a student comes to the professional school trained in this type of observation, no matter what phase of biology has served as a vehicle for this acquisition, the advantages of the professional course are much enhanced, and the carrying out of its especial responsibility of giving to the student that information which is to be directly used in his profession is greatly facilitated.

TRAINING IN POWER OF SOLVING PROBLEMS

The final one of the four capabilities I have selected as of prime importance in the practice of medicine and surgery is the ability to solve problems through orderly, sustained thinking. This ability can be inaugurated in the collegiate biologic courses, which offer many admirable opportunities, I can select only one or two. The training in this capability, if so inaugurated, can be much elaborated in the professional school.

In such a simple thing as identifying a bird or a flowering plant as to its genus and species, there is brought into operation the principle of differential eliminative diagnosis, which lies at the foundation of the practice of medicine and surgery. To identify a flowering plant, one is first compelled to select out characteristic factors from those common to a larger group. The fact that a flower has petals is not an index of whether a plant is monocotyledenous or dicotyledenous, but the number and arrangement of them are. So at every step the student must select from many the one determinative character. At every step he stands at the forking of two roads, and he must be enough alert each time to choose the correct fork in order to arrive at his destination. If he chooses the wrong fork he will soon find that the roadside markings are not familiar, and then must retrace his steps to the point at which he made his error. This is exactly what the practicing physician or dentist must do with every case that has not, through repetition, become thoroughly familiar.

In many phases of biologic study the student must learn to proceed in a methodical and orderly fashion through a seemingly intricate maze, going from the general to the differentiated, from the simple to the complex, if he is to reach a solution of the biologic problem presented to him, and this is exactly the habit of mind that is requisite in professional practice.

CONCLUSION

Much is said and written of the tremendous burden of the professional course; but if the student entered the professional school trained in intellectual honesty, in critical discriminative observation, with an introduction as to methods in solving biologic problems, and, added to these, a definite habit of effectual methods of study, this burden would largely disappear, except for the mentally incompetent or the habitually indolent, neither of whom has any reason to aspire to a profession.

My thesis is that, since the training for a professional career is a continuous process, in which at least the undergraduate college must jointly and nearly equally share the responsibility with the professional school, in the college more attention should be given to training men in those capabilities requisite to professional life, a few of which I have discussed, and this is more important than imparting information. The information as a by-product, if courses of proper subject matter are selected, will be sufficient for the professional school to build on.

In inculcating these characteristics, the teacher in the undergraduate college has a distinct advantage over the teacher in the professional school. He gets the student two or three years earlier, when his mind is more mobile and his habits less firmly fixed, and he has a greater latitude in choice of courses and their content to serve as a vehicle for this training than is possible in the necessarily more rigid professional curriculum. Here is where undergraduate college teachers can best serve their time and generation through the agency of students destined for professional careers.

CONSECRATIO MEDICI *

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There is an old saying that interest does not bind men together: interest separates men; there is only one thing that can effectively bind people, and that is a common devotion. This, a common devotion, more than any other possible influence, serves to overcome the self-depravities and conceits inherent in us which, uncontrolled, represent the chief defect in our natures. Our loyalties, to be sure—loyalty to nation, to a cause, to community, to school, to family, to friend—are somewhat akin, yet there may be something of personal interest, prejudice or defense in these particular reactions which makes them not wholly unselfish.

So let us believe, for our present purposes at least, that "devotion" not only implies a higher standard of self-effacement but still carries something of its quondam religious significance. And it is of the doctor's consecration to his task that I wish to speak, the kind of unselfish relation to suffering humanity that made St. Luke the beloved physician no more or less than it makes many another doctor of name unheard and unsung today.

It is this common devotion to their life's work that serves to bind those of the profession into which you are entering, with ties more close and enduring than those which hold any other group of people engaged in a common purpose. Nor should it make any difference where or how you may come to be engaged. The lives of countless Weelum MacLures, in the obscurity of their respective Drumtochtys, have been no less consecrated, could we but know them, than those of the Ambroise Parés, and Listers, and Pasteurs on whom the light of history has been turned.

Devotion is an attribute one cannot estimate and record by ordinary standards. How much the practicing doctor cares about his patients as individuals apart from their being the source of his livelihood; how much the medical scientist may be interested in promoting science rather than in securing his own promotion; how much the teacher influences his pupils to their best efforts, unmindful of what the curriculum briefly requires of him; how much the student engages in his work for the work's sake, regardless of his marks and rating—all these things depend on a devotion which places spiritual above material rewards.

This may sound, my young friends, like sermonizing. And valedictory addresses to medical students are prone to be commonplace, "platitudinous with the platitudes of a thousand pulpits," as Sterne said was true of most sermons. But there are certain things which concern the code of the doctor, handed down to us from ancient times, which though commonplace deserve reiteration on such occasions as this. They are things often lost sight of in these days when the Hippocratic Oath, as supposedly too antiquated for present-day purposes, is rarely read to graduating classes. I rejoice that Jefferson maintains this custom, for there is nothing, than this justly famous *credo,* that can better express the ideals which from the first have actuated the doctor and have led to the solidarity of the profession you are entering. No guild has a sounder code of ethics; no masonic group stronger ties of brotherhood.

For no insufficient reason do we as a profession hark back to the fifth century before the Christian Era when the man we venerate as the "Father of Medicine" first cast superstition aside, dissociated his calling from priestcraft, and based it on the principles of inductive philosophy. So, tempering them to our modern period, we may well hold fast to those hallowed rules of professional conduct which he promulgated and which have stood the test of usage as long as the canons of the Old Testament, which likewise in these fallen days are become somewhat unfashionable.

My reason for making professional devotion a text on your graduating day is to emphasize the doctor-and-patient relationship. However many of you may come to be diverted into other channels of professional activity, I take it that the school whose diploma you have gained still holds the practice of medicine as the primary object of your four years and more of training, and consequently that the prospective patient has from the first been kept in view even if distantly.

In these days when science is clearly in the saddle and when our knowledge of disease is consequently advancing at a breathless pace, we are apt to forget that not all can ride and that he also serves who waits and who applies what the horseman discovers. In some of our schools so great an emphasis has come to be laid on the science courses, with the patient long hidden from sight, that the better students, under the influence of teachers who have never had clinical experience, naturally come to feel that somehow the practice of medicine among the people is an inferior calling compared to the secluded life of an investigator, and that to justify themselves in the eyes of the faculty they must manage to "do a piece of research."

Indeed, when the students in some of these schools reach their clinical years their senior teachers are often men whose perspective is largely institutional, and consequently it has become, for lack of time, interest or experience, no one's business to give instruction in those aspects of medicine which will be so important to the greater number of you in the future: the relation of doctor to doctor, of doctor to patient and patient's family, of doctor to community, and of our profession to the others, particularly to the priesthood from which medicine took its origin.

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* Commencement address at the Jefferson Medical College, Philadelphia, June 5, 1926.

Dr. Thomas Percival thought these matters of sufficient importance to write a book about them for the benefit of his son on his entry into medicine; but for the most of you who have never heard of Percival and his code[1] they are left to be learned in the bitter school of personal experience; and many a promising career may come a cropper from misunderstandings of professional ethics the chief tenet of which, after all, is proper observance of the Golden Rule, not only in our relations to our patients and our professional brethren, but to society in general.

In our present day when so great emphasis is being laid on keeping people well by periodic health examinations and preventive medicine, all this about medical practice may sound very old-fashioned. But say what one will, the time inevitably comes to each and every one, now in the best of health, when he will needs cry out for some experienced and sensible doctor who can alleviate if not cure his particular ailments, be they physical or mental; and the kind of sagacity and resourcefulness he will expect and need is less laboratory-born than bred of long and sympathetic familiarity with the anxieties and complaints of ailing, damaged and worn-out human beings. These things were perhaps best learned in the days of student apprenticeships, and our efforts to recall something of the old-time elbow-to-elbow familiarity of teacher and pupil under the guise of a tutorial arrangement shows a growing appreciation of the advantages of a long-abandoned system.

We have gained much for science but have lost much for practice by the course we are following, and I look forward to a time when the pendulum will swing back, not to a day when the spirit of research will be any less active, but to a day when suitable representatives of the clinical departments will be delegated to correlate the teaching in the science courses so that their bearing on what is to come may be constantly kept in mind. A course in pure science unrelated to the patient belongs rather in the college than in the medical school.

It is a common complaint that, in their exercises, clinical teachers fail to draw the lessons they should from the laboratory courses. It is doubtless true that they lag in their familiarity with and the adaptation of the newest disclosures of science; and it is perhaps a lame excuse that science as yet has no obvious bearing on the greater portion of the doctor's daily problems. But in rejoinder the clinician might well ask whether it could possibly harm a teacher of the preclinical sciences to have served a house-officership; or dampen his investigative ardor should he even spend an occasional hour or two in contact with patients in the wards or ambulatory clinic.

Both parties to this mild family disagreement among the faculty must endeavor to see the matter clearly and without prejudice. Through the concentrated application of the scientific method in the fifty years past, medical progress has been nigh incredible. We must therefore make every effort to support and encourage the scientific spirit, for who can foretell what prodigious strides may be taken in another half-century? But the capacity for productive research is a rare quality akin to genius, and the future investigator among you will doubtless be found, or find himself, irrespective of this or that curricular arrangement. Whether it is necessary or worth while for the majority, who are destined to put to practical purposes the knowledge gained from the laboratory, to be given such an exclusive preliminary science drill as they are now given in many schools, is a matter of doubt, and a happy solution of this puzzling question will some day perhaps be reached.

You who are graduating here today, wherever you land—in laboratory, in hospital clinic, in practice—will have occasion to lament the insufficiencies of your preparation. This has been so from the beginning and will be so to the end of time. However secure the foundation may appear to have been laid, you will come to build on it an individual kind of superstructure which could not possibly have been anticipated. "Could I only have had a better grounding in biophysics instead of wasting my time in the clinic!" groans the young laboratory worker who endeavors to solve some baffling problem. "Could I only have had a little more dissection I would not have mistaken a median nerve for a tendon when I sewed up that cut wrist!" groans the youthful surgeon. "Had I only learned to puncture a bulging ear-drum instead of electing that useless laboratory course I might have saved this poor child from a meningitis!" groans the young practitioner. "If we could only have foreseen this, that or the other, we would not have spent our time as we did," we groan in unison.

From vain regrets Good Lord deliver us. Experience has to teach us many things we have never learned from the schools. You will remember Paré's account of an episode in the little hamlet of Suze some time in 1537. "See how I learned to treat wounds made by gunshot: not out of books."

Most of you, I take it, will—as Jefferson graduates have done before—come to recruit the ranks of the practicing doctor in this great state. Personally I have been too much astride the fence to take sides strongly in regard to the relative satisfactions of a life so devoted, or to one dedicated to teaching and investigation. With a background of family practitioners, I have, by the fall of the dice, come to lead a life different from theirs, not so sequestered as that of some, but sufficiently so to let me estimate the recompenses and weigh the satisfactions which come from an existence of the two kinds. Certainly the self-sacrificing career of the practicing physician, respected and beloved of his community, is no less, perhaps even more, character-making and ennobling than the secluded life of a pure laboratory worker whatever be the importance of his researches and discoveries. In either case, "success dwells in the silences though fame be in the song."

We live in an era of specialization, but specialization can be overdone and there is no inherent reason why the qualities of investigator, teacher and practitioner should not go hand-in-hand, be represented in a single individual, and he be none the worse for the mixture. So it was, for example, in the case of the incomparable Hunter; so it was, to come nearer home, in the case of two of the great peripatetic teachers, Nathan R. Smith and Daniel Drake, who were associated with the birth of this school of whose diploma you may be justly proud.

And should you in your "waiting time," when patients seem few and your outlook uncertain, wish to gain courage and receive stimulus, read the lives of these men and learn what perseverance may accomplish. Contrast your opportunities and training with those of Drake, brought up in a log cabin at May's Lick over the mountains in what was then the wilderness of Transylvania; and who in the midst of teaching, of founding medical schools, of practice, came to be recognized as the leading climatologist and epidemiologist of his day. All this you will find in the volumes of medical biography, which deserve a place on your library shelves alongside your journals and textbooks.

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[1] The basis of the code of ethics generally adhered to by English-speaking doctors was formulated in 1803 by Percival, who, besides being a practicing physician in Manchester, England, was a mathematician and a natural philosopher, one of the first biometricians, one of the first to urge the isolation of contagious diseases, one of the first to emphasize public sanitation and the importance of what we now call industrial medicine.

> Excellent courage our fathers bore—
> Excellent heart had our fathers of old;
> None too learned, but nobly bold
> Into the fight went our fathers of old.

But even better than this, stouten your hearts by reading of the doctor in fiction, and emulate Lidgate, at least up to the point which will warn you against marrying the wrong woman. Familiarize yourselves with the writings of healthy-minded doctors like Oliver Wendell Holmes and John Brown of "Rab and His Friends." If you need an antidote for the cynicism of "Arrowsmith," buy or borrow Sarah Orne Jewett's nigh-forgotten story depicting her own father as "A Country Doctor"; for there are still John Leslies in the country districts and room for many more—plenty of room, too, for Nan; and if she is really serious about it she's worth to the world a thousand Leoras. Perhaps best of all, if you would learn what unalloyed professional devotion may be and what rewards it may bring, read or reread the last chapters of Ian McLaren's "Beside the Bonnie Briar Bush" and let the example of Weelum MacLure, to whom I have already alluded, become a part of you.

Still, you need not resort to biography or fiction to learn something of the spirit of devotion that is the mainspring of our profession. You have plenty of examples, living and dead, here in your own school. Being a surgeon, and more familiar with Jefferson's century-long story of surgery than with her story of physic, let us look there for illustrations, the more fittingly since a talented and enterprising surgeon was your founder; and it took no less a person than a fighting McClellan to succeed in such a venture under the very shadow of, and with no little opposition from, the oldest and most celebrated school in the country, his own alma mater. She it was who provided his successor in the chair of surgery on the reorganization of your school in 1841; and the name of Thomas Dent Mütter, who, alas, from overwork died all too young, is held in thankful remembrance through the museum he founded and the lectureship he established—a lectureship which has been of help to many young men, as I can testify, who had the privilege of holding it just twenty-five years ago.

On Mütter's enforced retirement in 1856, the school for the first time reached out for an example of its own product, and chose a man who had graduated with its second class and who, meanwhile, had gathered as a teacher experience almost as rich and varied as that of Daniel Drake himself, under whose influence he had come in Cincinnati. Young men in those days were less fearful of transplantation than we, and the twenty-eight years during which Samuel David Gross subsequently served here in his fourth chair of surgery saw him rise to the top of his profession. We may well believe that the increasing flood of students who during those years went out into the world as Jefferson graduates were deeply influenced by his scholarly example and teaching.

But if the elder Gross and his contemporaries may seem somewhat shadowy figures to you, the mantle he wore as doyen of American surgery has now for long rested on the shoulders of his successor, a man endowed with perennial youth, who seems likely to hold that emeritus position among us for time untold. And as Dr. Keen's spirit dominates time, so the unquenchable spirit of your beloved teacher, "Jack" Da Costa, dominates a disability which would long since have driven a lesser man to retirement and inactivity. It is, furthermore, this same spirit of "never give in" that keeps the star of a frail gentleman shining brilliantly in a galaxy of Philadelphia surgeons, a man whose personal dexterity enables him to save more lives, and those the precious lives of children, each day, week and month, than may be given to others to save in a year or in a lifetime. If the Recording Angel keeps score of the numbers any one of us as individuals may possibly have snatched from the very jaws of death, certainly Chevalier Jackson's name tops the list.

Favored is the school that may carry the tradition of men who have shown such professional devotion as these, and whose spirit has conquered time, age, ill health and circumstances. A wise doctor who knew his patients well once said that in his experience the best work in the world was often done by people suffering from some bodily affliction; and this is a heartening idea you may well pass on in your turn to some of those who may in future years consult you and for whom you may have little to give but encouragement and comfort. You indeed will have to mix many of your prescriptions with a basis of hope, and too little stress is laid in most courses in therapeutics on the beneficial effect of optimism and cheer in combating disease.

We are tending to become a standardized country, and it is perhaps on standardization that industrial progress is founded. But standardization of our educational systems is apt to stamp out individualism and defeat the very ends of education by leveling the product down rather than up. The more really important qualities of people are quite beyond pigeonholing, quite beyond measurement by scales, tape or mental tests, quite beyond rating by any known system of examination, all of which fail in giving us an estimate of that most essential of all qualities, personality.

The capacity of the man himself is only revealed when, under stress and responsibility, he breaks through his educational shell and he may then be a splendid surprise to himself no less than to his teachers. There is no profession in which such surprises are more likely to happen than in ours, no profession which offers greater opportunities for the development of character, provided you will consecrate your lives unselfishly to your tasks as others you would wish to emulate have done before you. In so doing you will meet responsibilities as they come, with intelligence and courage; you will play fair with your fellow men remembering that the practical religion of the physician is not the promising of bliss in the future but the giving of health and happiness on earth; and above all, you will hold fast to that noble phrase of Hippocrates: "Where there is love of humanity there will be love of the profession."

I am going to read to you, in closing, a paragraph from a book which I can warmly recommend for its philosophy and humor. You will observe from its title that I may have had it in mind in choosing the text of this, in comparison, most feeble address. It is Stephen Paget's "Confessio Medici." He says therein:

Every year, young men enter the medical profession who neither are born doctors, nor have any great love of science, nor are helped by name or influence. Without a welcome, without money, without prospects, they fight their way into practice, and in practice; they find it hard work, ill-thanked, ill-paid; there are times when they say, 'What call had I to be a doctor? I should have done better for myself and my wife and the children in some other calling.' But they stick to it, and that not only from necessity, but from pride, honor, conviction; and Heaven, sooner or later, lets them know what it thinks of them. The information comes quite as a surprise to them, being the first received from any source, that they were indeed called to be doctors; and they hesitate to give the name of divine vocation to work paid by the job, and shamefully underpaid at that. Calls, they imagine, should master men, beating down on them: surely a diploma, obtained by hard examination and hard cash, and signed and sealed by earthly examiners, cannot be a summons from heaven. But it may be. For, if a doctor's life may not be a divine vocation, then no life is a vocation, and nothing is divine.

THE CLINICAL CLERKSHIP IN MEDICINE

DETAILS OF A METHOD OF INSTRUCTION *

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The problems of medical instruction are the same as those of education in general, modified only by the nature of the subject. The aim of all intelligent pedagogy is to teach the student to teach himself. In order that this may be done effectively, he must be taught to think independently and be inspired to continue to study and enjoy his work after the immediate contact with the school has ended.

The difficulties that stand in the way of the realization of this goal are many. Most students are poorly prepared for such a method of instruction, and better immediate results are obtained with weak material by "spoon feeding." Such an objection, of course, is merely an explanation for shirking duty. Material must be accepted as it comes and developed without wasting time on complaints. Predigested instruction is like spoon feeding a child for fear of having him spill some of the food. He would have to be fed for the rest of his life. A still greater difficulty, especially in medicine, is the necessity of teaching a tremendous number of facts. The need for economy of time urges one to tell the student what he is trying to find out rather than permit him to grope in the maze. This is a shortsighted attitude. If the student is followed through several years, his retention of the facts he has learned is surprisingly poor. This is no great cause for worry. If he has once learned the method of digging the facts out for himself, he will at least have learned how to get at them again. The dictum never to sacrifice method for facts is probably the soundest pedagogy. There is no danger of not learning sufficient facts under a system of self-instructing education. The danger is rather that too many facts, which often are not facts, overwhelm the student who has only a normal mental digestive capacity.

An attempt is being made to apply these principles to the clinical clerkship in medicine. In American medical schools, the clerkships are usually reserved for the final year. By this time, the student has almost completed his period of systematic training and is about to become his own instructor. This transition is important and justifies a description of the general principles and, more particularly, of the details of the course during which the change is taking place.

CLINICAL CLERKSHIP IN BELLEVUE HOSPITAL

We are discussing here specifically the month spent by the students in the Second (Cornell) Medical Division of Bellevue Hospital. This forms a small portion of the course in medicine and only one half of the total period of medical clerkship. Our students spend another month in the medical wards of New York Hospital under the direct instruction of the head of the department of medicine, Dr. Lewis A. Conner, and his associate, Dr. Nellis B. Foster. The students have already received the usual training in medicine during the second and third years, and they are supposed to be familiar with the methods of physical diagnosis and clinical pathology. In the clerkship at New York Hospital, particular attention is paid to thorough physical diagnosis, the one most important feature of clinical medicine, and the professor of medicine has so planned the whole course that we at Bellevue are expected to emphasize other aspects of the subject.

Bellevue Hospital furnishes excellent clinical material. The Cornell medical division controls three wards of from twenty-five to thirty beds each, and there are about 2,800 admissions to these three wards during the year. There is more than enough material for each section of ten or eleven clinical clerks, and only the most instructive cases are assigned to the students. Each man studies in detail from ten to fifteen patients. This does not seem like a large amount of work for a man's entire time during a whole month, but each student is also given the opportunity of seeing all the more important activities of the division.

PREPARATION OF CHART

On the morning that the clerks first arrive, the director of the division takes them to the hospital office, where they register as official members of the house staff with certain duties and responsibilities. This formality is important, since it puts the clerk in a better frame of mind to work under the interns and gives him a better sense of his duties in taking the official histories and recording his laboratory work on the charts. When the students have registered, they are given complete sets of the instructions to be found at the end of this article, and the director then spends about an hour in explaining the general principles as well as the details of the work.

First, the question of the charts is discussed. Each student is required to submit at the end of the month ten complete charts. Each is prepared as follows:

1. A complete and detailed history is obtained by the student, who follows in the first two or three cases an outline of history taking based on the form used by the Johns Hopkins University Medical Department. After the student is thoroughly familiar with this form, he is allowed to omit the unimportant negative findings.

2. The form of the physical examination also follows the one used at Johns Hopkins. Particular attention is paid to the general appearance of the patient, and the clerks are instructed to make this so specific that a stranger could identify the patient in a large ward.

3. The first charts are reviewed in detail by an instructor, and the logic of the questions asked the patient and the sequence of the examination are dis-

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* From the Second (Cornell) Medical Division of Bellevue Hospital.

cussed with the student. Immediately after the physical examination, a tentative diagnosis is written before the hospital chart has been consulted or before the laboratory reports have been received. We do this not in the spirit of giving the students an examination, since we attach little weight to the correctness of the tentative diagnosis. We insist on it in order to make them crystallize their thoughts. The tentative diagnosis may be changed in subsequent notes as often as is necessary. It is hard for an experienced clinician, and particularly hard for a student, to commit himself to a diagnosis in black and white, but there is no living teacher so instructive or so emphatic as the same written words triumphant or abashed in the presence of a necropsy.

4. Next, the clerk examines the official hospital chart and summarizes all the previous findings, paying particular attention to the various therapeutic measures and their effects. If necessary, the temperature chart is copied.

5. The students are expected to perform in all cases the essential routine tests: urine examinations, blood pressure measurements, hemoglobin determinations, luekocyte counts and an examination of the blood smear. All other laboratory procedures are to be done on the student's own initiative as dictated by his curiosity and desire for information.

6. Progress notes must be made at frequent intervals covering the nurses' record as well as the changes in physical signs, medication and diet. The chart should be kept up to date, so that it will give at any time a complete picture of the case.

The notes must also contain an outline of the therapeutic measures indicated, with the necessary prescriptions written in such form that they can be handed to a druggist. This particular requirement seems to cause much anguish among the students. Like their elders, they hate to write detailed prescriptions but much prefer general vague outlines of methods of treatment.

DIVISION OF TIME

The clinical clerks report for work and sign a book in the laboratory at 9 o'clock every morning. They are supposed to finish at about 5 o'clock, but usually work later either in the wards on in the library. Ward work occupies the time until 11:30 in the morning. Then while the patients are taking lunch, the clerks go to the ward laboratory and make their blood counts and other tests. During this hour, conferences may be held dealing with such subjects as coma, edema and methods of medication. Mondays, Wednesdays and Fridays, the clerks either make formal ward rounds with two part-time clinical professors, Dr. Walter L. Niles, the dean, and Dr. Malcolm Goodridge, or else attend in another part of Bellevue Hospital a tuberculosis clinic given by Dr. James Alexander Miller to his clinical clerks of the College of Physicians and Surgeons. Our students greatly appreciate this hospitality extended to them by Columbia University, and it is believed that this example of cooperation between two universities is an important part of their instruction.

The charts, ward work and rounds described above are similar to those used in teaching clinical clerks throughout this country. We can now devote our attention to three features that are not universally employed. They have been introduced in accordance with the general principle that the students should learn to teach themselves during the remainder of their lives and that they should follow in general the methods of self-instruction that have been adopted by their teachers.

CASUALTY CONFERENCE AND PAPERS

Perhaps the most important of all is the casualty conference held every Tuesday afternoon. This is conducted by the director of the service, who thus checks the diagnoses and treatment of every patient who has been the subject of an operation or necropsy during the preceding week. The house physician reads a summary of each case. The students, if they have not seen or heard about the necropsy, are then asked for their diagnoses. Next, the members of the staff who have not seen the patient are asked to make diagnoses from the description given by the house physician. After that, the diagnoses made on admission and throughout the patient's stay in the hospital are read from the chart. Finally, the pathologic intern reads the necropsy findings and shows the organs. In checking up the diagnosis, it is often found that the most accurate estimate has been made by the house officer or the clinical clerk. The students are impressed with the great chances for error in diagnosis that may occur even when patients have been carefully studied by experienced clinicians. They see that their instructors are willing and eager to go on record in public in order that each may benefit by his mistakes. No clinician's reputation for infallibility lasts through more than three conferences, but his reputation for honesty waxes as the other wanes. Every effort is made to wean the student from the pernicious idea that a diagnosis must be correct because one of his professors has given it the weight of his authority.

At this conference, there is also a good opportunity of checking the results of operations and the interpretation of roentgen-ray films. An effort is made to show the clerks the necessity for reading their own roentgenograms and not becoming dependent on the diagnosis of the roentgenologist.

One of the aims of the clerkship is to develop not only safe physicians but also intelligent and cultured students. Therefore the clerk is impressed with the fact that a careful history, a complete examination, both physical and laboratory, a logical diagnosis, and adequate therapy are only the mere essentials. To be more than a good technician, he must now begin to wonder. As the "why" of his findings take form in his mind, he should inquire into the literature, interview authorities and, if possible, investigate for himself. In order to start the student on this road, each clinical clerk is expected to hand in one case report every week except the first. The subjects for these papers are selected by the men themselves, but they are urged to pick out something connected specifically with one of their patients yet based on one of the fundamental preclinical sciences. Having selected titles of the papers, they search for information in the library, using the various indexes, consulting original sources and avoiding, according to our specific instructions, all predigested material found in textbooks or systems of medicine. A dozen or so original articles are then reviewed, and a paper of five or ten pages is written with a short bibliography attached.

Each one of these papers is then read by one of us, and a good deal of time is spent discussing with the students the material and manner of presentation. We tell them that, since the reading of their papers takes time that we would otherwise devote to reading the original literature, we expect to receive this information from their papers. We say that if they cannot bring us the information we need, they have failed in the main purpose of the paper. We do not want the kind of material contained in textbooks with which we are familiar, but desire a summary of the important recent work on this particular subject. We emphasize the fact that a statement is of no value to us unless we know the authority and evidence on which the statement is based. An effort is made to teach the clerks how to distinguish between reliable and unreliable work, and we tell them that the librarian is instructed to help them find not only work that is good but also work that is bad. The responsibility is the clerk's to distinguish between the two.

The average quality of these papers is surprisingly high, in view of the inexperience of the students and the brief time allowed them. Sometimes they make the mistake of trying to cover too much ground; occasionally, they give a rehash of well known facts; usually, however, they bring us what we want in a well prepared, interesting form with a surprising sense of values regarding the relative importance of certain facts. One gets the impression that their sense of values is on the whole fresher and keener than it is in the case of their elders. For all these reasons, it is a pleasure rather than a task to read their papers with them, and there is no better opportunity of encouraging the student in the habit of searching for knowledge and expressing himself clearly.

This particular method of instruction was learned from the students themselves. About ten years ago, some of the men of Cornell University Medical College organized a journal club called the Vesalian Society and presented papers at their monthly meetings. We as faculty advisers attended these meetings and were impressed by the fact that the students were learning more by themselves than they learned in school. We therefore borrowed their method of instruction and added to it the students' clinic, which is merely a development of the journal club idea.

STUDENTS' CLINIC

This clinic, the third method of self instruction, is held every Thursday afternoon and it lasts an hour and a half, which is about time enough to present four cases. It takes the place of grand rounds, that unwieldy method of instruction usually designated as " shifting dulness." It is much more comfortable and easier on the feet to have the patients wheeled into the clinic room.

Each clerk is allowed eight minutes for the presentation of his case. This means that he must eliminate all unimportant and negative data and select from the mass of material those things which are essential. The director of the service presides at the first three of these clinics and, unless the man is presenting material that is unusually interesting, holds him strictly to the eight minutes. The students are surprised and resentful when time is called, resembling their elders in these respects, but they are reminded of the well known fact that the pest of modern medicine is the man who exceeds the time allotted for his paper. After two clinics they realize this fact, and it is impressed on them by the clerk who is last on the program and therefore in danger of being crowded off the platform. Actually, the program is most often delayed by the instructors, who take great pleasure in discussing the cases at these clinics.

We have said that the first three clinics of the month are conducted by the director of the service. The last clinic is turned over entirely to the students, who select a chairman, arrange a program, present the cases and conduct the discussions, inviting any one they choose in the city to participate. These are by all odds the best of the clinics. No time is wasted; no one attempts to talk for more than a few seconds after he has received a warning signal from the student chairman. In the preparation of the discussions, there has been not only a search of the recent literature, but also many interviews with the heads of the preclinical departments, which deal with the principles involved. We have taken a certain pleasure in telling the clerks that it is a part of the regular college work of each professor to talk over with fourth year students the fundamental principles involved in the study of his cases in the clinic. Men engaged in research are usually only too glad to attend these student clinics and to add to the discussion. The same research men, as a rule, try to get out of any such affair when asked by their clinical colleagues.

At the end of the month an experience conference is held, and the clerks are asked to criticize the course and suggest improvements. Many of the ideas presented at these conferences have proved very helpful and have been incorporated into the course. This meeting also serves as a clearing house for ideas on education and hospital internships, and has a distinct value in promoting better understanding between the instructors and the students.

COMMENT

The plan that has been outlined deals only with the mechanics of instruction. By far the most important element in teaching is its spirit. In a previous article by one of us,[1] the general conception of medical education and the factors that are necessary to make any plan work were discussed. Here only a few points need be emphasized. Students learn best by example. This applies to their attitude toward patients, to punctuality and to mental honesty. Therefore, an instructor must work. He must plan and arrange schedules long in advance of the exercise; he must be prompt in his attendance, and must try to come into close personal contact with his students. Unless he has a real affection for these future physicians and has faith in their characters and minds, effectual work is impossible. The students recognize slipshod instruction readily. To teach by "skilful neglect" is a paradox, because if it is skilful it is not neglect but hard work. To make a plan such as this effectual, two other conditions must be realized.

Whenever possible a student should be asked, not told. Certainly he must be given an opportunity to think before he is required to remember. Most important of all, the correct result should never be stressed. Such a policy leads those inclined that way to intellectual dishonesty. Improvement is the important goal, and errors should be welcomed if they offer a basis for development.

This plan of clinical instruction in the fourth year is submitted because it illustrates a method of putting into effect our conception of instruction: The purpose of instruction is to teach the students to teach themselves; the manner of instruction is by example and work; the spirit of instruction is sympathy for and faith in the student.

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[1] Du Bois, E. F.: On Certain Courses Not Listed in the Medical Curriculum, Science 59: 53-56 (Jan. 18) 1924.

Below are given the printed directions that are handed to the students:

RULES FOR CLINICAL CLERKS

1. Clinical clerks' charts, except when in use, should be attached to the bed near the hospital charts.

2. When a case is assigned, take the history at once and write it on a hospital history sheet and attach it to the hospital chart. As soon as a member of the visiting or house staff gives it his written O. K., it will become part of the hospital records. . . . If you are assigned a case in which a history has already been recorded, make a history of your own and attach to your chart. Take a blood pressure reading after taking history and record it on the temperature sheet.

3. Next make a complete physical examination and record it on your chart at once. Use stamps to record chest findings. Write your provisional diagnosis immediately after the physical examination is performed.

4. Laboratory work should be recorded on the hospital temperature sheet or continuation sheet immediately as well as on your own chart. When you need specimens, request the house physician or junior to write the necessary orders in the book. The reaction of the urine is determined by the indicators provided for the purpose (methyl red and phenol red). In doing a differential count at least 200 cells must be counted, and every type of cell must be included in your classification.

5. Follow-up notes must be written on every case as often as indicated—daily in acute cases, at least twice a week in all cases. These should include notes on patient's condition, previous night's rest, temperature, pulse and respiration, change in physical signs, medication, diet, fluids, therapy, etc. Check up your notes with those on the nurse's sheet (blue sheet).

6. Prescribe medication and diet for each case and change prescription as indications arise. Make your own prescriptions complete and detailed—include dosage vehicle, etc., just as though your patient were to receive it in your office.

7. Ten complete cases (including discharge or summary notes) must be handed in before the service of each clinical clerk is completed.

8. Attendance at postmortem examinations of patients seen by students takes precedence over all other work except ward emergencies.

REPORTS OF CASES BY CLINICAL CLERKS

Each clinical clerk is expected to hand in one case report at 9 a. m. every Wednesday except the first. These are to be written or typewritten, if possible, on the regulation paper and should be contained in the regular folders. By means of the work involved in preparing these case reports, we are trying to teach the following:

1. A more careful study of the patient.
2. A more careful consideration of the differential diagnosis.
3. A better selection of important or interesting features of the case.
4. A better acquaintance with library methods and the means of obtaining medical information.
5. A critical study of original sources of information with an ability to discriminate between the good and the bad.
6. A facility in expressing facts in a concise, interesting and convincing manner.

In other words, we are trying to teach the students how to teach themselves for the rest of their lives.

The case reports should be constructed as follows:

1. Student's name.

2. Patient's name; age; sex; date of admission and discharge; diagnosis.

3. Summary of history, physical examination and course. Since these have already been given at length on the ward charts, this summary should be brief (one-fourth page is sufficient).

4. Discussion of diagnosis or of some interesting feature of the case. Try to make your report a correlation between the clinical aspects and one of the fundamental sciences. Each important statement should be substantiated by the name of the author responsible. References should be numbered.

5. Bibliography giving for each article quoted:

   1. Name of author.
   2. Title of article.
   3. Name of journal (standard abbreviations).
   4. Year.
   5. Volume.
   6. Page.

For books, give author, title, edition, city, publisher, year and page.

Students are not expected to repeat in these papers material that can be found in textbooks or the systems of medicine. They should go to the original sources and show the facts on which writers of textbooks or systems base their statements.

Instructors commenting on these papers are requested to note especially:

1. Ability in selecting the important phase of the subject.
2. Ability in selecting good original articles.
3. Ability in selecting the important points in good articles.
4. Ability to criticize an article.
5. Ability in expressing thoughts clearly and concisely.
6. Ability to make the reading apply to the case in hand.
7. Originality in thought.

TOPICS OF REPRESENTATIVE PAPERS SUBMITTED BY CLINICAL CLERKS[2]

Chills and fever.
Bilirubin in the blood serum in cardiac disease.
Cause of pain in gastric and duodenal ulcers.
Prognosis in diabetes mellitus.
A consideration of factors which determine prognosis in acute lobar pneumonia.
Pigment metabolism.
Significance and mechanism of heart pain.
Mechanism of orthopnea.
Pleuritis: (*a*) relation to tuberculosis; (*b*) pathogenesis.
Tuberculosis versus "gassed" lung.
Sympathectomy in angina pectoris.
Reasons for negative blood culture in subacute bacterial endocarditis.
Cause of crisis in pneumonia.
Edema in cardiac decompensation.
Capillary pulsation.
Leukocyte count in acute lobar pneumonia.
Cause of anemia in malignancy.
Discussion of cyanosis in emphysema.
Certain aspects of acidosis in nephritis.
Pathologic physiology of pulmonary emphysema.
The guanidine theory of hypertension.
Pharmacology of quinidine.
Antibody formation in tuberculosis.
Dynamics and diagnosis of mitral stenosis.
Pain in lobar pneumonia.
Differential diagnosis of supradiaphragmatic and infradiaphragmatic conditions.
Factors in the toxemia of pneumonia.
Pathologic physiology of aortitis.
Blood transfusions.
Consideration of vital capacity of the lungs.
A conception of pulmonary transudation.
Dyspnea with particular reference to cardiac conditions.
Water and fever.
Hiccup—etiology, relation to epidemic encephalitis and its treatment.
Genesis and mechanism of auricular fibrillation.
Sippy treatment and its physiologic rationale.
Cause of thrombus formation.
Pathologic physiology of ascites.
A consideration of jaundice.
Kidney function.

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[2] These papers are kept on file in the college library.

THE STANDARDIZED HOSPITAL AS A TRAINING SCHOOL FOR BETTER PHYSICIANS AND NURSES *

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By a "standardized" hospital is meant one in which the grounds, buildings, equipment, methods and personnel are developed up to or beyond the requirements of a standard or schedule of requirements fixed by some standardizing agency. The remarkable fact has been the prompt recognition by hospital superintendents, staff and other personnel of the needs for hospital improvement and the ready acquiescence to the suggestions made by the several standardizing agencies. Rather than a drafted army, which, to escape a penalty, follows a flag or standard, the hospitals are more fittingly referred to as an army of enthusiastic volunteer workers who, after all, in all worthwhile work, are those who accomplish the most.

THE STIMULUS FOR IMPROVEMENT

The improvement in hospitals, as in medical schools, has been a natural result of the tremendous increase in medical knowledge during the last fifty years. The activities of Pasteur gave an impetus to medical research which resulted in fixing the germ origin of many common diseases of mankind, and stopped for all time the frightful epidemics which with grim regularity exacted an appalling tribute in suffering and death. As a result of these discoveries and the wider research which they stimulated, more exact knowledge regarding the causes, treatment and cure of diseases has been obtained during the last fifty years than in all previous time. In consequence, the fields of medical teaching and medical practice have been enormously expanded, resulting naturally in the great improvements which have been brought about in medical schools and hospitals.

HOSPITALS INDISPENSABLE IN MEDICAL EDUCATION AND PRACTICE

In 1900, before the recent reorganization of medical schools was begun, only a small proportion had a sufficiently close relationship with hospitals to permit of even moderately efficient clinical teaching. Medical schools up to that time were mostly undeveloped and crudely conducted institutions, as compared with our modern high standard medical teaching plants. So also, hospitals since that time have been greatly improved in quality and increased in quantity. It was apparent that for the medical school a well equipped teaching hospital was indispensable. It has since become increasingly apparent, also, that the medical school or some other arrangement for medical instruction is highly essential for the hospital. There is a high degree of interdependence, therefore, in the improvement of medical education and hospitals.

It is in its capacity as a part of a university medical school, indeed, that a hospital has the opportunity of fulfilling to the highest degree its educational function. It not only conducts a training for medical students, physicians and nurses, but also through research adds its quota to the knowledge of medicine. Each of the hospital's functions is best fulfilled only if its other functions are equally well performed.

With the greatly broadened education furnished to physicians, the methods of practice have also become more highly technical and complex. Physicians have been forced to limit their practice within narrower bounds in order to attain a higher degree of skill in their various specialties, and in this connection the hospital has become of greater importance in the present day practice of medicine. Patients coming to the hospital benefit from the higher skill of the organized staff of specialists, and in the hospital, on the other hand, the staff member can more easily limit his practice within the lines of his specialty.

The modern practice of medicine requires also the use of highly technical scientific apparatus, which is too elaborate and expensive for the individual physician to possess but which naturally becomes a part of the equipment of every standardized hospital. For this reason, therefore, the physician is seriously handicapped who does not have ready access to a hospital. The average patient, also, can receive more prompt and efficient care in a hospital, especially in emergency cases, because of the accessibility, not only of well qualified physicians and nurses, but also of all needed instruments, operating rooms and laboratories. The hospital, therefore, is highly essential in the present day practice of medicine.

EDUCATIONAL FUNCTION OF THE HOSPITAL

Through its educational function, the standardized hospital becomes in every way a more active, alert and progressive institution. In the training of nurses and medical students, an atmosphere of investigation is created among the attending staff. Regular conferences are held regarding patients having unusual complicated diseases or regarding unusual causes of death, which are attended by students, interns and staff. This atmosphere of education and investigation stimulates the provision in the hospital of other helpful agencies for carrying out therapeutic and investigative measures, such as social service workers and district nurses. When the hospital is not a teaching hospital of a medical school, it will be free to encourage the physicians of its community to attend either its special conferences or courses of advanced medical instruction, or to invite the local medical society to hold its regular meetings in the hospital amphitheater, where on occasion patients can be used to demonstrate the application and efficiency of some improved method of diagnosis or treatment. This educational function may be further extended by instruction in regard to health preservation and sanitation for the patients who come to the hospital for treatment; and, through the visiting nurses and social service workers, the community can be informed regarding the value of modern scientific medical care.

It can be seen, therefore, that the standardized hospital can exert a tremendous increase for good, especially if it requires a high standard of both moral and professional qualifications for its staff members. As a model human being is one who is equally well developed in his physical, intellectual and moral make-up, so the best hospital depends to an equal extent on the excellence of its physical plant, the high intellectual qualifications of its personnel, and the moral atmosphere maintained throughout the institution. The most vital part, or principle, of every hospital, however, is the high standard of professional and moral qualifications which must be possessed by its staff of physicians and nurses. Lessen or destroy this primary or vital element, and the hospital to an equal extent ceases to serve humanity.

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* Read before the Catholic Hospital Association at Chicago, June 17, 1926.

HOSPITAL SERVICE AT ITS HIGHEST POINT

The greatest service to humanity during sickness or injury is the goal toward which hospitals have been striving; and their efforts have not been in vain. At no previous time have hospitals reached so high a standard of efficiency in public service as now. But the fight has just begun. A high standard of professional qualifications has, indeed, been established in our better hospitals, but that high standard must be maintained.

DESTRUCTIVE INFLUENCES AT WORK

Every progressive movement is sure to meet with opposition. The increases in medical knowledge have been so great and the essential changes in medical education and practice so rapid that the people generally have not become informed in regard to them. Along with the many reliable and scientific facts demonstrable that have been developed in the last twenty years, there have been also numerous grossly exaggerated, purposely misleading or entirely false schemes heralded by ignorant, self-seeking, or mercenary individuals who seek to profit through the needs of people who are sick or in distress. Along with the higher grade medical schools with their modern scientific methods of diagnosing and treating diseases, there have appeared also certain "schools," or groups of healers foisting on the public certain unproved theories or certain methods of treatment as panaceas for all diseases that afflict mankind. Through the efforts of the medical profession to keep its own house in order, quacks, fakers and diploma-mills have been mostly eliminated from its ranks. Certain other groups of practitioners, however, have coined certain high sounding names to designate massage, manual manipulations or some other form of treatment, and because of such limitations claim that they "are not practicing medicine" and, therefore, are not subject to the high educational and professional qualifications that physicians are required to possess. Nevertheless, they attempt to treat sick and injured persons and, by so doing, assume the physician's responsibilities.

CONFUSION FROM VARYING STANDARDS

So plausible do their arguments sound to those unfamiliar with the dangers of unqualified practice that, in some states, lay and credulous members of state legislatures have been persuaded to grant them authority to treat the sick. Such action has not only brought much confusion in the field of medical education and practice but is also threatening to destroy the high standard of education and skill on which efficiency and service in the modern hospital depends. Followers of these pseudomedical groups have been trying recently to force hospital trustees to grant them admission to hospital staffs, or to give them the right to treat patients in the hospital. In some states, indeed, legislation has been enacted making it appear obligatory for hospitals receiving financial support from city or state to permit such practitioners to treat patients in those institutions. The word "appear" has been used advisedly.

TRUSTEES MUST DECIDE

It is the trustees (or directors) of the hospital who must decide this matter, since they are morally, if not legally, liable for the safety and proper care of the patients in the hospital. For this reason, they are fully justified in refusing to permit any one to treat patients in the hospital no matter whether he is a physician, a cultist or any one else who, for moral or professional reasons, is deemed incapable of providing intelligent and efficient treatment for sick persons. The final decision should rest with the courts, wherein individual or corporate rights can be weighed against inexpert legislative enactments. Thus far the courts have recognized the right and duty of hospital trustees to decide who shall and who shall not care for patients in their institutions and have invariably upheld them in such duty. In all instances, save one, which have come to my knowledge, where legal proceedings have been resorted to by those refused admission to hospitals, the trustees have been upheld. In the one instance to the contrary referred to, no active or intelligent opposition was made by the hospital authorities.

POSITION OF THE HOSPITAL STANDARDIZING AGENCIES

So serious to the hospitals is this menace from unqualified practitioners that the several national agencies having to do with the standardization of hospitals are unanimous in their decision that hospitals admitting such practitioners to their staffs are no longer safe places for the care of the sick and are unworthy of being listed as approved hospitals.

HIGHLY TECHNICAL METHODS OF MODERN TREATMENT

With the great increase in the knowledge of medicine during the last thirty years, many methods of treatment have been developed that are highly technical and extremely dangerous in unskilled hands. Surgery, which formerly was employed mainly as a last resort, is now commonly used and is saving annually many thousands of lives. The knife in the hands of an expert can remove a tumor that is sapping a patient's vitality, with a restoring of his health. In unskilled hands, however, the same knife can as easily sever a nerve or other vital part leading to the permanent disability or the death of the patient. The roentgen ray and radium, which are of much importance and service in skilled hands, can create great havoc if applied by those unacquainted with their dangers.

NO COMPROMISE REGARDING STAFF QUALIFICATIONS

These facts emphasize the great danger that sick persons would be subjected to if hospitals were thrown open to any uneducated quack and charlatan who cannot or will not obtain the professional training and skill that physicians are required to possess. In the hospital, therefore, there should be no retrogression and no compromise regarding the qualifications of its staff. Safety lies in the requiring of definite educational, professional and moral qualifications for those who are to treat sick persons within its walls—qualifications such as are required by the medical schools of our well established and reputable universities.[1] Then apply that standard without discrimination to every one admitted to the staff, or allowed to treat patients in the hospital. The standardized hospital, above all institutions, should stand as a champion of honest and efficient service; for truth and scientific fact and as a safeguard against the unreliable fallacies, fads and frauds which in this day have become so prevalent. In its educational function of training physicians and nurses it is essential that this education include only scientific and sound procedures. Otherwise it will be doing actual harm and result in retrogression rather than progress.

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[1] The education that is deemed essential for physicians in civilized nations around the world consists of (a) a high school or secondary education; (b) two or more years in college; (c) four years in a medical school, and (d) one or two years as an intern in a hospital.

ONE OF MANY REMARKABLE DEVELOPMENTS

In no one type of public institution have improvements been of greater service to humanity than those which have taken place in hospitals. Progress in this field, meanwhile, has been parallel with the remarkable improvements made in other lines of professional and nonprofessional activity. As can be said of so many of the marvelous developments of recent years, "more has been accomplished in the last few decades than in all previous time." This does not mean that the highest acme of perfection has been reached; the wave of progress evidently has just begun. Larger fields of service are to be reached by the modern hospital, and the secret of this further progress appears to rest in the wider development of the hospitals' educational function. This will result not only in a further improvement of the professions of medicine and nursing and in the furnishing of facilities for the practice of modern medicine, but also in a greater and more lasting benefit to the public through the dissemination of information in regard to safe, sane and judicious ideas regarding the preservation of health and the further prevention of diseases and the anguish and distress caused thereby.

THE TEACHING OF TROPICAL MEDICINE *

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The curriculum in American medical schools is in process of change. It is not necessary to review all the causes for dissatisfaction with medical education or the problems now seeking solution. In this period of change, however, it is to be noted that less essential subjects are being dropped, and general subjects are receiving more attention at the expense of special subjects. To produce good general practitioners is an aim constantly more in mind. It is interesting that in this changing situation, with increasing emphasis on sound training in fundamentals, attention to tropical medicine is rapidly advancing. We find courses, departments and entire schools where a few years ago the entire subject was unknown. Is this a sound tendency, and why is it being pushed?

WHAT IS TROPICAL MEDICINE?

Strictly speaking, there are remarkably few strictly tropical diseases. Most of the great plagues of the tropics are more or less cosmopolitan. Many of the more dangerous diseases of temperate climates appear in more florid forms, spread faster and run a more virulent course under tropical conditions. In some cases the symptomatology is essentially different in tropical climates. This is illustrated by amebiasis, which is primarily dysenteric in the tropics and costive in colder regions. But the great majority of so-called tropical diseases are also found in temperate climates. To understand their tropical significance, more is necessary than a knowledge of their natural history in temperate zones. We must be familiar with the elements of tropical climate which modify or change disease characteristics. These elements are, essentially, four: humidity, temperature, altitude and sunlight. Various combinations of these four elements lead to the striking features of tropical climates.

Seasonally, geographically or casually, all of these elements are more or less present in the temperate zones and modify disease conditions there. Hence, a study of these physical elements of climate is important for understanding disease conditions in our own country. Naturally, they can best be studied where their greatest extremes and constancy and interrelations are exhibited. This is in the tropics. Therefore tropical sanitation, hygiene and climatology have a definite lesson for medical practice in cool climates.

A definition of tropical medicine is not complete which does not include the sciences of medical and human geography. The elements of human geography in their application to problems of disease require that we relate the natural history of the disease to geographic location, land forms, bodies of water, soil, minerals and climate. It is unnecessary to discuss these in detail here. It is my purpose now only to show that tropical medicine comprehends a study of disease from a somewhat new and different point of view with reference to physical environments, and that many striking features of environmental conditions are best exemplified in the tropics. As a result, we find in the tropics endemic foci of many diseases which can never be controlled in a broad sense until tropical environments are understood and controlled.

IMPORTANCE FOR MANKIND AND THE SCIENCE OF MEDICINE

In estimating the importance of tropical medicine for mankind, we have several broad biologic factors to consider. The story of advancing mankind has been told in temperate climates. Growth in civilization and culture has been closely proportioned to the beneficent and stimulating effects of seasonal change. Lacking the urge of cold, dark winters and climatic variations, man did not progress. The great exception to this law was in Egypt, where automatic irrigation and fertilization more than compensated for the climatic uniformity.

With mankind increasing and progressing most rapidly in temperate zones, it follows that we must approach a time of insufficient food supply. This is perhaps the chief reason that drives civilized man to the tropics as to a great untouched storehouse. While the tropical climate does not favor the production of seed plant harvests, nevertheless other types of foodstuffs are available in unlimited amounts. This is not to speak of the mineral, lumber, industrial and power resources of the tropics, all of which are valuable necessities for the future progress of man. Moreover, to a degree as yet not well established, white races can themselves work and live healthily in the tropics.

It is evident, therefore, that the future of man will depend in no small degree on his conquest of the tropics, and it has been proved abundantly that the conquest of the tropics depends strictly and alone on scientific medicine. There is no other human agency that can meet the problem. It is logical, then, to emphasize tropical medicine in our curriculums, and to interest and stimulate some students to enter this field and all students to appreciate not only the actual clinical importance of the subject in the United States, but especially the great human and scientific value of tropical medicine for the future of mankind.

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* From the Department of Public Health and Preventive Medicine, Stanford University School of Medicine.

IMPORTANCE IN THE UNITED STATES

We can classify the importance of tropical medicine for the United States under three headings: (*a*) By means of commerce, travelers, returning government officials, troops and missionaries, cases of tropical disease are being brought into the United States in increasing numbers. (*b*) The elements of tropical climate are present in the United States to an extent that makes the endemic establishment of these diseases here an easy possibility. (*c*) We have already in the United States endemically present tropical diseases that are worthy of special study from the standpoint of tropical medicine. Among such diseases are hookworm infection, malaria, sprue, plague, dengue, spotted fever, intestinal parasites of all types, filariasis, pellagra, tularemia, Malta fever, dysentery and infectious jaundice.

These considerations forcibly urge the need and importance of emphasizing tropical medicine in the curriculums of American medical schools.

IMPORTANCE TO THE MEDICAL STUDENT

The objects of a medical school are twofold. The first object is to train sound general practitioners in the art and science of medicine. The second is to select students not of higher, but of special, aptitude for careers in pure science, in research and in teaching. For the practice of medicine in most parts of the United States in the coming decades, a fair knowledge of tropical medicine is a necessity for reasons already reviewed. For the research student and teacher, it is even more a necessity because of the great problems of prevention and control that await solution today here in our own country. Only a fair beginning has been made. Another angle of the same matter is that, without a systematic acquaintance with tropical medicine, the student planning a research career is handicapped by his lack of full survey of the field of prevention and control of disease, and therefore cannot make the best selection of the direction in which he will apply himself. The plenitude of opportunity in research in tropical medicine is receiving more and more appreciation in this country, and it is only fair that medical students should know the opportunity and that scientific research should receive the advantage of recruiting new workers in this field.

THE CURRICULUM IN TROPICAL MEDICINE

The contents of a course in tropical medicine in an American medical school will naturally depend on the general educational objects of the school. It may vary from a full department with a full-time professor at its head to a series of occasional lectures, optional or cultural in their purpose. The type of physician the school aims to produce and the medical needs it aims to fulfil for its students are the deciding factors in the allocation of time and the selection of subject matter.

At Stanford, there is offered in the department of public health and preventive medicine a course of twenty-two hours, which is designed to give the student a knowledge of the incidence, means of spread, diagnosis, control and prevention of those diseases of hot climates which are encountered in the United States. In addition, it is sought to build up a background of appreciation of tropical sanitation and hygiene, of geographic and climatic influences, of the actual disease problems demanding solution, and some acquaintance with the racial problems involved.

The subjects included are:

1. Intestinal parasites, especially protozoa, vermes, trematodes and dysenteries.
2. Epidemic diseases: cholera, plague, yellow fever, dengue.
3. Filarial infections.
4. Malaria.
5. Climatology, human geography and epidemiology.
6. Avitaminosis, especially beriberi, scurvy and pellagra.
7. Sprue.
8. Yaws.
9. *Leishmania* infections.

This course is supplemented by a concurrent laboratory course of twenty-two hours in which practical technic is perfected, parasites are demonstrated, and ordinary parasites are discovered and identified.

METHODS OF INSTRUCTION

The course in tropical medicine uses a standard textbook with assigned readings in the library and reviews from current tropical literature. Recitation, discussion, lecture and clinical demonstration are intermixed. Later, as well as during the course, the students see and study the diseases discussed as they appear in patients in the outpatient clinic and the teaching wards. In the laboratory, each student learns for himself to discover and identify the common parasites.

SURVEY OF TROPICAL MEDICINE IN AMERICAN MEDICAL SCHOOLS

A survey of the catalogues of most of the seventy-one class A medical schools in the United States gives some interesting information. Most of the Southern schools devote definite attention to tropical medicine. Several of the older, larger, better known schools have developed full departments as at Tulane, or separate schools of tropical medicine and public health as at Harvard and Johns Hopkins. Most are represented by single courses in tropical diseases, and these are given when clinical material is available. The trend toward increasing the time allotted and toward recognition of the subject as such is definite. In several schools, graduate courses are offered or a short, intensive, full-time course. In this connection, note should be made of the rapidly increasing number of laboratories not connected with medical schools that are featuring tropical diagnosis and parasitology.

CONCLUSION

Tropical medicine is being found an important element in the training of medical students in the United States, and many physicians are realizing a need for postgraduate instruction in it. Undergraduate instruction can be fitted into the present curriculum by a different emphasis and classification at small additional expense of hours. The general practitioner in most parts of this country needs such instruction. The development of commerce and travel is opening lines of medical work where such instruction is a necessity.

384 Post Street.

Veterans' Bureau Manual of Nephritis.—The Journal commented editorially on the Veterans' Bureau manual of Wassermann technic (March 27, p. 956). In Clinical Bulletin 12 of the same series, the compiler has condensed the subject of nephritis into an outline of thirty-six typewritten pages. The introduction shows that the classification is modeled on that of Dr. Henry A. Christian, and avoids the difficulty, often encountered, of correlating anatomic classifications with clinical findings. Acute, subacute and chronic types of nephritis are recognized as main divisions, and the last two forms are subdivided. Each type of the disease is taken up in the orderly way that is generally employed by writers on internal medicine when describing a given disease.

A NEW TYPE OF EXAMINATION FOR MEDICAL STUDENTS *

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In the spring of 1925, Prof. Ben D. Wood of Columbia University succeeded in interesting the Department of Anatomy, Pharmacology and Orthopedic Surgery in a new type of examination. We of the Department of Anatomy were glad to turn from the old essay type of examination to a more comprehensive test of the students' knowledge of the subject. The old type of examination had almost uniformly consisted of eight or ten essay questions for which a total of three hours was allotted. We felt that too much of the students' time was given to English composition and relatively few facts could be developed for the energy expended.

These examinations of the new type are very easy to correct and grade, but their composition is a matter of considerable difficulty. The instructors engaged in producing an examination of the comprehensive objective type must be scrupulously careful to avoid ambiguity in any question. Each question should be of sufficient importance to warrant its inclusion. Only the strictest vigilance will exclude ambiguous and petty or unimportant questions.

We have felt that the labor expended in compiling these tests has been amply repaid by the distinctly more accurate information we have obtained of the students' knowledge of the subject. The grading of all students is such a very chaotic and unsatisfactory performance at present that any attempt to improve it seems eminently worth while. The premedical students are accepted into the medical school on criteria which seem to be faulty when so little is known about their ability after years of observation at school and college. An examination is too often regarded as a penalty by the student. It is suffered to become a purely perfunctory termination to a course by the instructor. It may be made a most valuable aid in determining the ability and achievement of the student.

During the school year of 1925-1926, the department of anatomy has given several of the new type examinations to both the first and second year classes along with one of the essay type to each class. The department of orthopedic surgery used the new type again this year, and several other clinical departments have experimented with it.

It is interesting to note the reaction of the students to the comprehensive test. The great majority of them prefer it to the essay type because it gives them greater opportunity to show what they know. With a large number of questions, inability to answer a few is no calamity. For the most part complaints came only from the rear guard, who are apt to complain in any event. Here, as elsewhere, we find that the "breaks" go to the better team.

We are deeply indebted to Dr. Wood for his helpful suggestions in framing our earliest examinations. His office force has been at our disposal in gathering the material for this study. I am presenting the results of our earliest attempts with this new type of examination at the College of Physicians and Surgeons to those interested in the teaching of medical students. Dr. Wood has already presented this report to his colleagues in a technical journal[1] which is not apt to be seen by the medical profession.

A. PHARMACOLOGY

During the session 1924-1925, Dr. C. C. Lieb, professor of pharmacology in the Columbia University College of Physicians and Surgeons, constructed (with some technical assistance) and tried out several examinations containing new type objective questions. Four monthly quizzes were about equally divided as to time allowance between old type "essay" questions and new type objective questions; a fifty-minute new type test was given in April; and the final examination, of nearly four hours' length, was made up exclusively of objective questions. This final examination consisted of five parts, aggregating the formidable number of 794 items. In spite of the length and searching qualities of this examination, there were few complaints from the students; these complaints came almost entirely from students who were known to be at the lower end of the class. More than half of the students finished and handed in their papers before time was called, and the time was extended for the slower students by the proctors, so that it is practically certain that each student answered all the questions that he could have answered without time limits. Each form of the new type question used in the quizzes is represented in the final examination; for illustrative purposes, therefore, it is necessary to reproduce here only a few questions from each of the five parts of the final examination.

College of Physicians and Surgeons
Columbia University

FINAL EXAMINATION IN PHARMACOLOGY

1 June, 1925

Part I (54 items)

Directions.—Read each of the following paragraphs before attempting to make it intelligible. Then reread it and in each (. . .) choose the word or words capitalized which, in your judgment, most nearly expresses the truth and underline it or them. Example: Caesar invaded (Canada, *Gaul,* China, Britain).

1. The instillation of a few drops of a 2 per cent solution of cocaine hydrochloride into the conjunctival sac of the normal eye of the rabbit causes (Dilation, Contraction) of the pupil. The (Mydriatic Myopic) effect is brought about by an action on the (Nerve Ends, Myoneural Junctions) of the (Parasympathetic, Sympathetic) division of the autonomic nervous system, which innervates the (Sphincter, Dilator) muscle of the iris.

Part II (22 × 5) = 110 items

Directions.—Tabulate the effects of the drugs heading the several columns on the state or condition of the *functional activity* of the structures, organs, tissues, etc., listed below. If effective therapeutic doses, administered in the ideal way, increase the *functional activity,* use "+"; if they decrease *functional activity* use "—"; if the drug has no action write "0"; Complete column 1, as far as you can, before beginning column 2; then 2, then 3, etc.

	Epinephrine	Pilocarpine	Atropine	Nitrites	Strophanthin
1. Splanchnic arteries........	....	....	....	....	....
2. Splanchnic veins...........	....	....	....	....	....
3. Splanchnic capillaries......	....	....	....	....	....

Part III (100 × 5) = 500 items

Directions.—In answering these questions assume, unless otherwise stated, that full therapeutic, but not toxic, doses are administered in an admittedly effective way to average adult patients who show neither increased nor decreased tolerance.

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* This study was made possible by a grant from the Commonwealth Fund.

[1] The article will appear in full in an early issue of the Journal of Personnel Research, 40 West Fortieth Street, New York.

In column 1 indicate by a "+" those drugs that in the presence of normal renal function have a diuretic action; by a "—" those that lead to a decreased tolerance.

In column 2 indicate by a "+" all those drugs which are especially dangerous during pregnancy because of their possible harmful effects on mother or fetus; by a "0" those that have no such deleterious actions.

In column 3 put a "+" opposite all those drugs that may be expected to slow the heart of the average patient; a "—" opposite those that may be expected to accelerate it and a "0" opposite those having neither of these actions.

In column 4 put a "+" opposite all those drugs which may be expected to dilate the bronchi and therefore be of value in the treatment of "spasmodic" asthma; a "—" after all those that are contraindicated in asthma because they contract the bronchi and a "0" after all those having no effect on the caliber of the bronchi.

In column 5 put a "+" opposite all those drugs that have a corrosive irritant or caustic action when applied to the skin or mucous membrane; a "—" after all those that have a demulcent or emollient action and a "0" after those having none of these actions.

	1	2	3	4	5
1. Acacia	....	....	....	....	....
2. Acetanilid	....	....	....	....	....
3. Acetic acid............	....	....	....	....	....

Part IV (21 × 4) = 84 items

Directions.—Compare the direct actions of ether, chloroform and nitrous oxide on the circulation during the stage of full surgical anesthesia. In answering the question, put in column "A" "+" for stimulation, increase or improvement; "—" for depression or decrease, and "0" to indicate no action. If two or more drugs act on the same structure, function, etc., in the same direction (that is, if they depress it or if they stimulate it) indicate in column "B" the relative intensity of their action by using 1, 2 and 3, 1 indicating the most intense action.

	Ether		Chloroform		Nitrous Oxide	
	A	B	A	B	A	B
Sample answer: Muscle tonus............	—	2	—	1	—	3
Heart:						
Myocardium	..	..	..	..	..	..
Parasympathetic innervation...........	..	..	..	..	..	..
Sympathetic innervation.................	..	..	..	..	..	..

Part V (46 items)

Directions.—In each sentence select the correct alternative and put its number on the short line at the right.

1. A saturated aqueous solution of a volatile medicinal agent is called: 1, a tincture; 2, an aromatic water; 3, a solution; 4, a liquor ———.

2. The official saturated aqueous solution of camphor is called: 1, tincture of camphor; 2, spirit of camphor; 3, camphor water; 4, extract of camphor ———.

3. An aqueous solution of nonvolatile substance is called a: 1, tincture; 2, liquor; 3, mixture; 4, spirit ———.

The score in each part was the number of correct responses. The average score of the ninety-seven students constituting the class that took this examination was 465, with standard deviation 62.6. The scores gave a distribution which, in contrast with the distributions ordinarily afforded by old type examinations, is very similar to the normal curve of frequency. The scores ranged from 275 to 637.

In the College of Physicians and Surgeons, pharmacology is a second year course, and we may therefore set up a criterion of "reasoning ability" which will fulfil the conditions imposed by those who are most suspicious of the merits of the new type question forms. This criterion is the average of the final marks received by these ninety-seven men in all their freshman medical courses, and in all their sophomore medical courses except pharmacology. If the new type tests correlate more highly with this criterion than the old type tests do, it would appear that the charge against the new type tests, that they measure only memoriter facts, is dissipated by the very trial relied on by those making the charge. The following correlations between this criterion and indicated pharmacology marks are almost conclusive.

Correlations of the average of all freshman and sophomore medical school grades (save pharmacology) with:

1. Average mark on old type parts of four pharmacology quizzes (aggregating at least 100 minutes of working time) 0.22
2. Average mark on new type parts of four pharmacology quizzes (aggregating not more than 80 minutes of working time).. 0.31
3. A fifty-minute "new type" pharmacology test given in April, 1925 .... 0.36
4. The final pharmacology examination, 794 objective questions 0.54

This evidence shows, beyond doubt, that the new type not only measures breadth of information better than the old type and in less time, but also measures reasoning ability more fully and reliably than the old type does. It might be objected that these coefficients are all so low that they have little practical significance. In answer to this it can be definitely shown that these coefficients are brought to so low a tide by one, and only one, factor; namely, the incredibly low reliability of the old type examination marks, even when the marks of from fifteen to thirty hours of old type examinations are averaged.

INTERCORRELATION OF FINAL GRADES IN TWELVE MEDICAL COURSES

Correlations between twelve pairs of the final course grades given during the 1923-1924 and 1924-1925 sessions range from 0.06 to 0.49, with the average at 0.273. The six intercorrelations of the four sets of half-year average marks given in these two sessions range from 0.324 to 0.558, with an average of 0.446. The correlation between the freshman and sophomore year averages is only 0.495. All the marks involved in the foregoing correlations are based on old type essay examinations, since the pharmacology grades were not used in any of them. It is difficult to conceive how any one could suppose that these old type examinations measure the same central factor "reasoning ability" and still afford intercorrelations so low as these. The assumption as to what they measure and the fact of their low intercorrelations are wholly incompatible. The case for the old type examinations as "convincing indicators" of "ability to reason with and apply knowledge to problematic situations" is made still more doubtful by the slowness with which the intercorrelations increase in magnitude as we increase the number of hours of old type examinations. If the claim that they measure the same quality, reasoning ability, is really true, then their intercorrelations may be treated as reliability coefficients, and the Spearman-Brown[2] formula ought to apply. The fact of the business seems to be that the charge customarily made against new type tests, that they measure only "isolated and unrelated facts," should properly be made against the old type tests. The old type tests not only do not correlate with independent measures of known reliability and significance; they fail to correlate with one another.

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[2] The Spearman-Brown formula is a well established measure constantly used to estimate the reliability of an examination. It is based on the assumption that as the number of questions in an examination are increased, other things equal, the reliability of the examination increases.

B. ANATOMY

In the spring of 1925, I decided to try out a final examination made up exclusively of objective questions. Three quarterly examinations of the old type, each lasting one or two hours, had been given, and it was thought that the average of these would furnish a fairly reliable criterion of achievement in the anatomy course against which to measure the reliability and validity of the new type final examination. The new type final examination was made up of four types of questions, aggregating more than 500 items in all. The score attained by the 100 students constituting the freshman class ranged from 180 to 440, with the average at 353 and standard deviation 54.2. The first questions in each part are reproduced here for illustrative purposes:

PART I. TRUE-FALSE

Directions.—Put a plus sign (+) on the dotted line at the left of each statement that is true and a zero (0) at the left of each that is false. Do not guess.

........1. The female mammary gland is situated in the deep fascia.
........2. The axillary vein lies lateral to the axillary artery.
........3. The rhomboid muscles are supplied by the posterior primary division of the fifth cervical nerve.

PART II. COMPLETION

Directions.—Complete the following statements in such a manner as to compose in your opinion a correct answer:

1. The vessels winding around the lateral margin of the pectoralis major muscle are..............................
2. The structures penetrating the costocoracoid membrane are ....
3. The clavicle presents on its interior surface the following ridges or prominences ....

PART III. ORIGIN AND INSERTION OF MUSCLES

Indicate the origin by "O" and the insertion by "I" of the following muscles. One muscle is answered correctly to show the method.

	Sacrum	Coccyx	Os Coxae	Femur	Tibia	Fibula	Patella	Calcis	Talus	Navicular	Cuboid	Cuneiform	Metatarsal	Phalanges
Gluteus minimus......	..	..	O	I	..	..	..	..	..	..	..	..	..	..
Semimembranosus	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Adductor longus.......	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Vastus lateralis........	..	..	..	..	..	..	..	..	..	..	..	..	..	..

PART IV. NERVE SUPPLY AND ACTION OF MUSCLES

Directions.—Give the nerve supply of each of the following muscles, and indicate the action or actions of each by number. The answer to the first is given as an illustration. 1. Flexion. 2. Extension. 3. Medial rotation. 4. Lateral rotation. 5. Adduction. 6. Abduction. 7. Pronation. 8. Supination.

Muscles	Nerve Supply	Action
Lattissimus dorsi........................	Thoracodorsal	2-5-3
Pronator teres	....	.....
Biceps brachii........................	....	.....

RELIABILITY OF NEW TYPE FINAL EXAMINATION

The reliability of part I, consisting of 130 true-false statements, is estimated by the Spearman-Brown formula to be 0.76, and of Part II, consisting of about 200 completion items, 0.89. It is planned to make an extended study of the reliability of this and other new type medical examinations in the near future. For present purposes the reader may accept the estimate of Dr. Wood that the reliability of the total examination, consisting of more than 500 items, is not less than 0.95.

RELIABILITY OF THE OLD TYPE CRITERIA

The intercorrelations of the three examinations of the old type give an average of 0.50. By using the Spearman-Brown formula we estimate that the reliability of all three together is not above 0.71, and is almost certainly lower than 0.71, since we have evidence that the Spearman-Brown overestimates the growth of reliability in old type examinations. The average of these three one-hour examinations will be called "anatomy criterion," and the average of the final course grades for all freshman courses with the exception of anatomy will be called the "college criterion." This college criterion is approximately the criterion of "ability in medicine" which the college uses as a basis for eliminating students at the end of the freshman year, or passing them on into the sophomore class. What is its reliability? The intercorrelations of the final grades in the four courses in question range from 0.44 to 0.56, with average of 0.52. From this coefficient of 0.52, the Spearman-Brown formula leads us to estimate the reliability of the grades of two of the courses to be about 0.67, and of all four courses together to be about 0.80. These figures are considerably higher than the corresponding figures secured in our study of the criteria used to test the validity of the pharmacology new type examination. The explanation probably lies in the fact that substantial improvements were introduced into most of the examinations given in some of the courses taken by the freshman class now in question. The effect of these improvements was in general an increase in the sampling of materials from the subject matters and an increase in the objectivity of the scoring.

Summarizing our estimates as to reliability, we find that the new type test in anatomy is much superior to either of the criteria against which we may measure its validity.

Reliability coefficient of new test final examination in anatomy (500 + items), 0.95.
Reliability coefficient of college criterion, 0.80.
Reliability coefficient of anatomy criterion, 0.71.

VALIDITY OF NEW TYPE FINAL EXAMINATION

The anatomy criterion and the new type final examination are two rival measures of the achievement of the class in the anatomy course. The correlation between these two measures is 0.731. Which is the more valid? *A priori* grounds alone would indicate that the new type final is by all odds the better of the two measures. Its sampling of more than 500 important facts of anatomy, its objectivity, its high reliability, as against the narrow sampling of the three old type, subjective examinations of low reliability, render any other conclusion almost impossible. The only objection that might be made is that it is a superior test of the "factual" aspect of the course of study, but not of the "reasoning ability" so important in medicine. This objection would be strongly supported if the correlation of the anatomy criterion with the college criterion were higher than that of the new type final with the college criterion, but these correlations are 0.684 and 0.81, respectively. To assert, in the face of these relationships, that the anatomy criterion is a better measure of "reasoning ability" than the new type final is to assert that the anatomy criterion, made up of more than three hours of old type examinations, is a better measure of reasoning ability than the college criterion, made up of approximately twelve hours of old type examinations.

VALIDITY OF EACH PART OF NEW TYPE FINAL EXAMINATION

The correlations of each part with the anatomy criterion and with the college criterion were calculated with the following results:

	Anatomy Criterion	College Criterion
Total new type final	0.731	0.810
True-false	0.688	0.677
Completion	0.722	0.765
O-I	0.540	0.723
Nerve supply	0.256	0.451

The order of excellence would thus seem to be, from best to poorest, completion, true-false, O-I, and nerve supply muscle action. When the time element is considered, however, the two best would exchange positions; and much of the apparent inferiority of the O-I and N. S. tests might disappear. It must be remembered that these two tests occupied much less time than the true-false and completion tests. The completion part undoubtedly took three times as long to answer as the true-false part; so that in the time allowed to the completion part the students could have taken three times as many true-false questions as were given in this examination. The validity of 390 true-false questions would undoubtedly be greater than 0.76.

III. ORTHOPEDIC SURGERY

Late in the spring of 1925, Dr. H. L. von Lackum, associate in the department of orthopedic surgery, prepared, without any technical assistance from any measurement expert, a final examination consisting of thirteen multiple choice, sixty-one true-false and fifty completion questions. This undertaking is symptomatic of the general desire of teachers in the College of Physicians and Surgeons to escape from the inadequacies of the old type examinations.

The orthopedic surgery course is a comparatively brief course. Oral quizzes were given throughout the course; but the marks of these quizzes were not available as a criterion in this study for several reasons.

The department was convinced of the validity of the objective type of examination from the beginning of the year, and planned to base the year marks almost entirely on the final examination. The only check on the final examination results was in the form of supplementary oral examinations of students who failed on the final or who otherwise seemed to merit review. The oral quizzes, therefore, became almost exclusively pedagogic devices, both teacher and student enjoying unusual and very effective freedom from the restraints of measurement considerations in the classroom and from the "forced" atmosphere prevalent in classroom in which "grading" is often and obviously practiced.

In the absence of any systematic grades in orthopedic surgery against which to test the validity of the new type final examination, I prevailed on Dr. von Lackum to estimate the relative standing of the ninety-eight men in the class on the basis of his personal observation of their work in the course. These subjective estimates were used as the orthopedic surgery criterion. The college criterion was formed as in the study of the new type examination in anatomy; but in this case the marks of three full years of medical college work were averaged.

The correlation between the new type final and the orthopedic criterion is 0.50. The correlation of the three-year college criterion with the new type final examination is 0.611, and with the orthopedic criterion, 0.392.

The reliability of the objective final examination is about 0.70. No means are available for estimating the reliability of the orthopedic criterion, but its validity as a measure of specific achievement is indicated by the correlation of 0.50 with the new type final, and as a measure of general medical school ability by the fact that it correlates as well with the college criterion as one half-year average mark correlates with another half-year average mark.

The intercorrelations of the six half-year averages of these ninety-eight third-year students range from 0.216 to 0.557, with the average at 0.382. The correlations of the first year average grade with second and third year average marks are 0.617 and 0.56, respectively; and of the second with the third year average mark, 0.55. Thus, the average intercorrelations between whole year average grades is only 0.567.

REASONS FOR SUPERIORITY OF NEW TYPE EXAMINATIONS

Those who are accustomed to use the old type of examination exclusively may find it difficult to reconcile the results of this study with "common sense" views of examinations. Most of this difficulty will be due to an exaggeration of the virtues of the old type and of a failure to appreciate the exact nature of new type questions; it is also partly accounted for by an exaggeration of the differences between "memory" and "reasoning ability." These two mental functions are in reality very close correlates. Many teachers have needlessly plagued themselves with a mighty fear of students "getting away with something" by freakishly memorizing everything without "reasoning out" anything. It is a great pity that these marvelous memory freaks are so rare as to be almost mythical. All the scientific evidence available tends to show that "memory" and "reasoning ability," as far as examinations are concerned, are little more than different names for the same thing—a good measure of one is nearly always a good measure of the other. We cannot remember effectively without thinking, and we certainly cannot think or reason without remembering something to think with.

The old type examination as usually administered and scored is much more a mere reproduction or memory test than a well constructed new type test. When a student is asked to describe a joint or the action of a drug, he can do little more than set down in hasty sentences the facts that he has learned through reading about and observing the joint and the drug in question. It is difficult to see how any significant reasoning is possible in the answering of such a question.

The fact of the matter seems to be that the main value of the old type examination is that it *is* a measure of ability to reproduce what has been read or observed; and its main weakness is not so much that it does *not* measure "reasoning ability" but that it is a very unreliable and inadequate measure of "memory." It is not a good measure of either of these functions because, among other reasons: (1) it is *subjective* to both student and teacher; (2) it can involve only a *narrow sampling* of subject matter and of performance; (3) it involves the exercise of a very special talent, prose writing, under very adverse conditions; and because (4) it not only permits but provokes bluffing and playing to personal prejudices on the part of both student and teacher.

The new type test is a better measure of both reasoning and information because it is objective, it provides very wide samplings of materials and performances, it involves few irrelevant and distracting activities, and it may include problems of fact, of cause, of effect, of relations and of judgment which make as great and as genuine demands on the higher intellectual processes as those which are found in old type tests.

CONCLUSIONS

1. Objective forms of questions seem to be as well adapted to the measurement of achievement in medical courses as in the average college course.[3]

2. Each of the nine forms of questions tried out in this experiment have considerable validity for medical school courses. The most effective seem to be the standard forms—true-false, completion and multiple choice; but with more adequate trials, the tabular forms of questions may prove to be as good as, or better than, the standard forms, particularly for certain aspects of medical work.

3. The reliability and validity coefficients of the objective examinations described in this report are two or three times as high as those of much longer examinations of the old type in the same subject matter.

4. The objective examinations measure "reasoning ability," as defined by the criteria now used in the College of Physicians and Surgeons, more accurately and more reliably than old type examinations of equal or greater length measure it.

5. The reliability and validity of medical college grades based on old type examinations have been found to be entirely inadequate. Our results confirm those of other investigators.[4] The first year of medical school work predicts second year work no better than high school average marks predict college success.

6. The adaptability of objective forms of tests to medical school work demonstrated by this experiment suggests the hope that eventually there may be derived a series of objective, reliable and administratively convenient examinations on the common essentials of the medical curriculum, which will be universally applicable and which will afford accurate measures of defined achievement expressed in comparable and universally meaningful units. Such measures are prerequisite to the constructive educational guidance of students and to certain types of long needed research in medical education. As in all other educational institutions, the first duty of the medical college is not to teach but to learn students—to learn whether they belong in medical college, and if so, what specialties they might best pursue, if any. That this first duty has not been satisfactorily discharged by higher institutions generally is indicated by the high and increasing academic mortality rates in our colleges of liberal arts, of engineering, of law, etc. The traditional examinations have not merited the confidence which we have reposed in them. The objective forms of tests will by no means furnish panaceas for all the maladjustments in our educational system; but that they are capable of giving us more exact and more meaningful information about our students than the traditional examinations has been demonstrated beyond reasonable doubt.

437 West Fifty-Ninth Street.

THE FEMALE SEX HORMONE

V. A NEW METHOD OF DETERMINING SEX IN THE PRESENCE OF MALFORMATION OF THE GENITAL ORGANS *

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The sex of a person with malformation of the external genitals and malformation or absence of the internal organs of generation may be difficult to determine. In recent years it has not been unusual to perform a biopsy on the gonads (at times necessitating laparotomy) to arrive at a valid conclusion.

In two instances of malformation we have definitely established the sex of the patients by demonstrating the presence of the female sex hormone in the circulating blood by injecting lipoid extract of the blood into castrated mice and thereby producing a positive (estrual) vaginal spread.[1]

The theoretical considerations involved are that a person possessing functioning ovaries, irrespective of whether the tubular tract (vagina, uterus, tubes) and external genitals are malformed or aplastic, should have a demonstrable quantity of female sex hormone in the circulating blood some time between the fifth and fifteenth days after ovulation has taken place. Therefore, blood specimens should be taken at weekly intervals in order not to miss the acme of the reaction.

Negative results cannot be considered of definite significance, as ovaries might be present but for one reason or another might not be functioning over longer or shorter periods of time. Positive findings, on the other hand, must be evaluated as decisive, and even in the most extreme case, that of an ovotestis in which cyclic ovulation takes place, such a person should be considered as predominantly feminine.

The two cases in point are as follows:

CASE 1.—A. Z., aged 24, with normal vulva, had been operated on with only a small degree of success for the establishment of a vagina. The urethra was greatly dilated. Rectal examination showed no evidence of the presence of uterus, tubes or ovaries. The patient possessed feminine sex instincts. The facies was slightly acromegalic. There was a considerable hypertrichosis. Feminine sex characters were normally developed. Blood abstracted, March 26, proved negative. April 22, the reaction proved positive. This shows that the patient is a female.

CASE 2.—S. S., aged 22, complained of nosebleeds at irregular intervals of never less than one month. She had no strong sex impulses, but her inclination was toward men. The breasts were feminine; so was the hair distribution. The vulva was normal. The urethrorectal septum was very thin. High up a transverse band was felt, but no evidence of uterus or ovaries could be established. The first blood specimen proved to be strongly positive. This established the sex.

This method should prove a boon wherever the question of establishing the sex of a person arises and a positive feminine reaction can be obtained. It is naturally not applicable before the age of puberty.

10 East Eighty-Fifth Street—145 West Eighty-Sixth Street.

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[3] Wood: Measurement in Higher Education, World Book Company, 1923. Measurement of Law School Work I and II, Columbia Law Review, March, 1924; March, 1925.

[4] Notably of Prof. E. A. Bott (The Predictive Value of College Marks in Medical Subjects, J. Educational Research, September, 1925). See also Moss, F. A., and Hunter, O. B.: Public Personnel Studies, Washington, D. C., February, 1925, p. 52.

* From the Pathological Laboratory and Gynecological Service of Mount Sinai Hospital.

[1] The details of the procedure are given by: Frank, R. T.; Frank, M. L.; Gustavson, R. G., and Weyerts, W. W.: Demonstration of the Female Sex Hormone in the Circulating Blood, I, Preliminary Report, J. A. M. A. 85:510 (Aug. 15) 1925. Frank, R. T., and Goldberger, M. A.: The Female Sex Hormone, IV, Its Occurrence in the Circulating and Menstrual Blood of the Human Female: Preliminary Report, ibid. 86:1686 (May 29) 1926.

"MILK SICK," OR WHITE SNAKEROOT POISONING

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Eupatorium urticaefolium, the white snakeroot, belongs to the aster family. It is sometimes called boneset, polewort or squaw weed. It grows from 1 to 4 feet high and is widely distributed in the Western states from Minnesota to Louisiana and eastward. Its habitat is rich, deep, shady woods, but it will grow on a hillside in the shade, and on well drained land in the open. The common thoroughwort belongs to the same family and grows in the same locality. The only way to eradicate snakeroot is to pull it out or cultivate the ground.

Dr. Dwight Marsh of the United States Department of Agriculture produced white snakeroot poisoning after the plants had been sterilized in autoclaves. Walter Sackett produced poisoning by extracts, and related experiments have been performed at the Purdue University and North Carolina agricultural stations. This work has determined that the trembles in cattle arise from their eating white snakeroot, and that the cause of "milk sick" in humans is the consumption of milk and butter made from the milk of cows that have eaten white snakeroot.

This disease was recognized as far back as 1776 in North Carolina. Over many years it has taken lives in Tennessee, Ohio, Indiana, Illinois, Missouri and other Mississippi states in which it is endemic. Still there are large quantities of snakeroot in the woodlands along streams in all these states. Six deaths were reported in 1925 in Illinois from milk sick, and no doubt others were unrecognized. Nine cases with no deaths occurred in Grundy County, and a large number of cattle died.

I have seen forty-four cases of milk sick in thirty years and know indirectly of about sixty more. A few cases, with running comments, taken from this period, will illustrate how our clinical ideas developed concerning this strange disease.

REPORT OF CASES

In 1902, three members of a family near Morris had been sick for about two weeks, with loss of appetite, general weakness and slight pains in the region of the stomach. One of the group, the hired man, had apparently recovered completely. He walked 4 miles to see a physician, walked home and went to bed. He died in coma the next day. The employer, who had been sick and had recovered, assisted with the funeral and died in three days. The diagnosis was "milk sick," of which nothing was known. The late Dr. Bertram Sippy was called, and we obtained specimens of blood, sputum, urine and feces while the man was alive. Rabbits and guinea-pigs were injected and cultures made. Parts of all organs were taken at necropsy and were found to have undergone fatty degeneration, especially the pancreas and liver. Sippy found in the blood an organism that resembled the colon bacillus. This is the first postmortem of such a case on record, but no conclusions were formed.

Nov. 25, 1908, in the city of Morris I found a girl, aged 8 years, deeply comatose, with the pupils widely dilated, extremities cold, breathing labored, pulse 116 a minute but of fair volume, and a temperature of 97 F. She was unable to swallow, and her breath had a strongly sweetish odor. Diabetes was suspected. The mother related that two weeks earlier the child had had slight vomiting, weakness in the knees, pains in the legs, headache and prostration. She had been given free catharsis. In four days, she returned to school and continued to go until the day before I saw her. At that time she had eaten a large dinner and had become heated while playing. When she came home she went to bed, refused food, vomited every hour until 4 a. m., and died at 11 o'clock. The urine had given a mahogany color on addition of ferric chloride. There was no sugar.

Other members of the family had been ill. Milk sick was then suspected, and we found that the family supply of butter came from the milk sick district. I reasoned that a small quantity of butter could not poison the whole family; I thought it must be an infection, and called Dr. Jordan of the Infectious Hospital of Chicago and Dr. Harris. We made a postmortem examination. When the abdomen was opened, the odor of acetone was pronounced. Fatty degeneration of all the tissues was evident. A spore forming organism was isolated, which was named *Bacillus lactimorbi.* This was the second postmortem of such a case on record.

The second day after the death of the little girl, her mother was taken violently sick with vomiting, extreme prostration, pain in the abdomen, constipation, headache, subnormal temperature and fast pulse. The diacetic acid and acetone found in the case of the little girl suggested that we were dealing with a condition of severe acidosis. Diacetic acid was found in the mother's urine. In accordance with the usual treatment of acidosis at that time, we gave a teaspoonful of sodium bicarbonate by mouth every hour and 2 ounces by rectum every six hours. She made a complete recovery. This was the first case of milk sick which was treated in this way.

In July, 1918, I saw a cow with trembles. It was a dry time, in early summer, and the white snakeroot was from 6 to 12 inches high in the woods where the cow had been pastured. After the cow succumbed, the owner dragged the carcass to the edge of the river and enclosed it and a live hog within a hog tight fence. The hog had, in this way, access to water, but fed on nothing except the carcass of the cow. When the carcass was all eaten, we released the hog and ran it around. The hog did not show symptoms. There are reliable reports of hogs having died from eating cattle that were killed by snakeroot and that were still eating it when they died. In my case, however, the cow had been kept away from snakeroot for about three weeks and had ample time to excrete the poison from her body, so that there was little or no snakeroot poison left for the hog to ingest.

In October, 1925, I found a patient with a white blood count of 6,500; blood pressure, 90; extreme prostration; vomiting; distress in the epigastrium; pulse, 108 a minute, and temperature, normal. The acetone odor of her breath made me suspicious, and I inquired in regard to the cattle. None were sick. They had been north of the canal in high dry ground, but the milk of one had greatly decreased. In the pasture, we found quantities of white snakeroot that had recently been eaten down. The pasture was bare of all other vegetation, and it was evident that the cattle, as a last resort, had eaten the snakeroot.

The fatigue and recurrences characteristic of the disease are shown in the following case:

Dec. 17, 1925, I saw a patient who had symptoms of milk sick in the fall of 1924 and had never recovered. He was repoisoned in August, 1925. While husking corn vigorously in November, he became tired and had difficulty getting to the house. He had to rest several minutes. He had large quantities of diacetic acid in his urine; no increase in temperature; pulse, 88 a minute; leukocyte count, 7,000; blood sugar, 143; systolic blood pressure, 105; diastolic, 70; reflexes diminished, and a strong acetone odor in the breath. He had had five recurrences similar to the foregoing.

Although in the foregoing account there is nothing to disprove the association of micro-organisms with milk sick, it is evident that, when man consumes the milk of cows that are eating white snakeroot or butter made from the milk of these cows, he ingests a poison that causes fatty degeneration of all the tissues, especially the liver and the pancreas.

It is probable that the snakeroot poison destroys so many cells that the body is incapable of carrying on its normal chemical processes and that, consequently, we have recurrence of acidosis every time the individual attempts to eat normally or work to capacity somewhat the same as in diabetes. No sugar was found in the urine in any of these cases.

The treatment, in brief, is one-half drachm (2 Gm.) of sodium bicarbonate and 1 drachm (4 Gm.) of magnesia magma every hour and after vomiting until the bowels move freely. To this is added an enema of 2 ounces (60 cc.) of sodium bicarbonate in 12 ounces (385 cc.) of warm water every four hours until the urine turns alkaline; the treatment is continued by mouth until a 10 per cent solution of ferric chloride in the hands of the nurse does not show any mahogany colored precipitate in the urine. The diet is skimmed milk, orange juice and custards. Whisky seems to relieve the gastric spasms. When vomiting is incessant, dextrose, in the proportion of a teaspoonful to a cup of water, is mixed with the sodium bicarbonate enema. In the last two cases, ampules of dextrose solution for intravenous injections, and insulin were kept on hand, but not used.

THE PROPHYLACTIC USE OF MEASLES CONVALESCENT SERUM

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As measles is the most prevalent of the diseases of infancy and early childhood, and also predisposes to a complicating bronchial pneumonia, it is one of the two most fatal of the communicable diseases of early childhood, and its prevention has been eagerly sought by clinical and laboratory investigators. The ideal in their mind is to discover the germ and prepare a vaccine such as we have against diphtheria, tetanus and scarlet fever. Tunnicliff in the United States and Caronia in Italy have reported such discoveries. Their work is now being subjected to crucial tests. Herrmann has proposed a very interesting method of inoculating infants intranasally with the secretion obtained from the nose of an infant during the early stage of the disease. He proposes to do this inoculation during the sixth or seventh months of life before the infants have entirely lost their inherited immunity. This method, in our opinion, is not practicable for general use. It has been so far impossible to infect animals with any isolated measles virus or to produce in them an antiserum to the disease. While waiting for confirmation of the discovery of the germ causing the infection and the development of an antiserum, attention has been focused on the serum from human convalescents. It has long been known that the immunity acquired by an attack of measles is very marked, and that it persists in the majority of those who have had it for their whole lives. Some thirty years ago, a German physician used large amounts of serum from convalescents in the treatment of several cases in which the symptoms were just beginning. The results were favorable, and he suggested that it might be used as a preventive measure. The first results published on the use of convalescent measles serum were by Nicolle and Conceil. In the same year, 1916, Park and Zingher injected forty-one very recently exposed children at the Metropolitan Hospital. Twenty of these children received 8 cc. of serum, and none of them developed measles. Twenty-one received 4 cc. and three developed the disease, one on the fifteenth day, one on the seventeenth day and one on the twenty-fifth day after the serum was given.

Table 1.—*Total Deaths and Deaths from Measles*

	1918	1919	1920	1921	1922
Total deaths....................	98,119	74,433	73,249	64,257	69,690
Total deaths under 5..........	21,019	15,744	17,288	13,672	14,847
Total deaths from measles....	790	218	736	165	977
Deaths from measles under 5..	734	210	687	150	917
Percentage under 5............	4	1	3.5	1	6

Table 2.—*Amounts of Serum Used by Degwitz*

2.5 cc. in those exposed 4 days or less
5.0 cc. in those exposed 6 days or less
7.0 cc. in those exposed 7 days or less

Labels for Measles Convalescent Plasma

1. Each vial contains one dose of plasma—5 cc.
2. One dose is enough for children under 3 years or in the first four days of exposure
3. Children over 3 years or exposed more than four days should receive a double dose
4. Injection given intramuscularly through antitoxin needle

Dr....................Address.................Borough................
Was Given..............*Vials*..................*M. Im. Ser*..............
Lot No..........................For Case..............................
Name.......................Address....................Age.............
Name.......................Address....................Age.............
Date........................192.. Distrib. Ag........................

Record of plasma given to physicians.

DATA FOR INJECTION OF EXPOSED CHILDREN

	Name	Age	Address	Amount Inject.	Date	Lot No.
1.	....	....	....	....	....	....
2.	....	....	....	....	....	....
3.	....	....	....	....	....	....

Exposure, date of..........Manner of..........Degree of.........

DATA ON CASE TO WHICH CHILDREN EXPOSED

Date onset of fever...........Coryza............*Koplik Spots*..........
Rash.....................
Signature of Physician.......................................
Note Permit for Inspector to visit case

Card to be filled out by physician and returned to laboratory.

Since then, a number of articles have been published on the use of whole blood, serum and plasma obtained from measles convalescents.[1] Degwitz, in 1920, 1921 and 1922, published the results obtained by him and those working with him in more than 1,000 cases. The results were on the whole quite favorable in that if the disease was not prevented in some, it was lessened in its severity. His routine method was to draw the blood between the seventh and seventeenth day after convalescence, allow it to clot, and to use the serum intramuscularly after sterility and Wassermann tests had been done. Degwitz does not believe that the results obtained warrant the use of serum after the seventh day of exposure. He reports among his own series 85 per cent complete protection. This is more favorable than the results in other large series. Probably some of his children were not very markedly exposed.

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[1] *A bibliography is given* by Zingher, Abraham: Convalescent Whole Blood Plasma and Serum in Mealses, J. A. M. A. *82:* 1180-1187 (April 12) 1924.

Since 1921, the convalescent serum has been utilized with excellent results in the hospitals for contagious diseases in New York City in children who have been exposed by the development of measles in the wards. A grant of money by the Metropolitan Life Insurance Company made it possible to attempt to provide enough serum for all exposed inmates in children's institutions in New York City, and also for all the children in the city who were under 3. These classes of children were chosen because institutional children and those under 3 years of age are the most liable to pneumonia.

The use of convalescent serum in an infected child may prevent the development of the disease, modify the severity of the attack, or fail entirely of any effect. So far as the interests of the child are concerned, the best result is the development of a very mild attack. Under such conditions there is practically no danger of complicating pneumonia or any other complication. Recovery is practically certain, and the child has the advantage of an active immunity which may be considered lifelong. Those children have as a rule a very slight rise of temperature, perhaps to 100 or 101 for a day or so, and a slight coryza and a very slight to a moderate rash. Koplik spots may or may not be present. Those who are absolutely protected have only a passive immunity so long as sufficient serum remains, and this varies from about two to four weeks, and depends on the individual and the amount of serum injected. The child is after this period as susceptible as before.

The great problem in the prevention of measles by this method has been the difficulty of obtaining a continuous supply of blood large enough to meet the demands of a big city. When the work was started in New York, as far as possible, every adult measles convalescent was asked to give some blood, for which service a suitable reward was offered. Because of the small incidence of measles in adults in New York City and the usual refusal of patients to give their blood, this source of supply proved to be inadequate. It then came to the attention of the department that there was an epidemic of measles of considerable extent among the young adult students of a Southern university, all of whom came from rural districts. The students volunteered in large numbers to give their blood, and as they had all been treated in the university hospital, the diagnosis of measles was certain.

The method of drawing the blood was as follows: At the Willard Parker Hospital, blood was drawn on the ninth day after the defervescence of fever up to the twenty-first day, but at the Southern university the time was more varied, and some was drawn as late as five months after the disease. In the case of adults, all the blood was drawn through a 16 gage luer needle into a 500 cc. bottle containing 20 cc. of 25 per cent sodium citrate solution and 0.3 Gm. of oxyquinolin sulphate (chinosol) as a preservative. This preparation was used because it was found that in the dilution in which it was used it was an efficient bactericidal agent; the red cells were not destroyed, and it was not irritating when injected intramuscularly. The bottles were then put in the icebox and the cells allowed to settle, or were centrifugalized, and the plasma pipetted off. Blood for a Wassermann test was taken at the time of bleeding, and a sterility test was done at the time the plasma was put up into small bottles.

Plasma was used instead of serum, because of the greater yield for the amount of blood drawn and the greater ease of handling. All the blood drawn within six days of the same period in convalescence was pooled. Thus far, the figures indicate that the efficiency of the plasma is not markedly diminished by postponing bleedings for three months after the occurrence of the disease, and that storage in the icebox for six months does not appreciably alter its usefulness. The plasma was put up in 3 cc. and 6 cc. vials and 30 cc. bottles. The vials were distributed to private physicians with printed directions for use, and a card was given which was filled out by the physician and mailed back to the laboratory. This card contains questions concerning the number of children exposed, the date and type of exposure, the date of injection, and the lot number of plasma. Twenty-one days after injection, the case was investigated by a member of the department staff. The 30 cc. bottles were kept for institutional use when a large number of children were to be injected.

Table 3.—*Data in Institutional Children Receiving Preventive Injections*

Amount of Plasma Injected	Number of Children	Modified Measles, per Cent	Unmodified Measles, per Cent	Complete Success, per Cent	Incomplete Success, per Cent
3 cc.	219	20	8	72	92
4 and 5 cc.	190	8	2	90	98
6 to 10 cc.	243	6	2	92	98
Total in institutions	753	11	5	84	95
Total in families	226	42	5	52	95

RESULTS OBTAINED IN NEW YORK CITY

More than 1,500 children received preventive injections between December 1 and June 1. From 979, we have fairly accurate data as to the date and degree of exposure, the amount of plasma injected, and the success attained.

Of these 979 children, 753 were exposed in institutions and 226 in private families. In 404 of the institutional children and in all of the children in families, the exposure was direct. In 349 it was indirect, in that actual personal contact with a measles patient was not proved.

No bad effect followed the injections in any case. Only one of the children died, and this one had an empyema before contracting modified measles and was only 2 years of age. We do not think that the attack of measles appreciably hastened its death.

CONCLUSIONS

The injection of 6 cc. of convalescent serum or plasma into a child under 3 years of age and from 6 to 10 cc. for a child over that age who has been exposed for less than five days to measles is sufficient, as a rule, to prevent infection. If it does not, it almost certainly so modifies the attack that it is very mild and is not likely to lead to complications.

The prompt use of the serum will prevent serious outbreaks of measles from developing in institutions and so prevent the development of complicating pneumonias.

It would be of extreme value to have a supply on hand to prevent outbreaks of measles among troops, such as occurred so disastrously in the late war.

The serum gives immunity for only two weeks to one month. In the modified cases there is lasting immunity.

The serum gives the greatest accumulation of antibody shortly after the convalescence of the patient. At the end of three months, the antibodies are still abundant but probably less in amount.

In order that the use of convalescent measles plasma may become general, some plan must be devised by which the supply will be constant. It would seem that if every physician equipped himself with the very simple apparatus necessary for obtaining the blood, and if the attempt was made to draw between 10 and 25 cc. of blood from every case seen in children and larger amounts in adults, he would have enough for the majority of exposures in his practice, the average dose being only 5 cc. Institutional needs must be met by other methods, such as the one to which the New York City Department of Health had recourse. The department of health has a standing offer to send a physician to any convalescent adult who has given consent to have his blood drawn. After the blood is withdrawn, a fair proportion is kept for the use of the physician who referred the case to the department.

PROPHYLACTIC VALUE OF BLOOD OF CONVALESCENTS IN MEASLES *

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For nearly two hundred years, attempts have been made to immunize against measles. To Home [1] of Scotland is ascribed the first attempt at active immunization by vaccination with human blood, and also by the transplantation of nasal mucus, on a swab of cotton from a child having measles, on the nasal mucous membrane of another child. Hektoen [2] was the first to use a mixture of incubated human blood and ascites broth in an attempt to induce a mild form of infection. Recently, Herrman [3] has suggested a method of active immunization, making use of the well established fact that infants under 5 months of age are practically immune to measles. His method is to take the nasal mucus of a patient with measles, from twenty-four hours before to twenty-four hours after the eruption, and transplant it on the nasal mucous membrane of another infant. This transference, in many cases, brings about slight constitutional symptoms within a few days and results in a permanent immunity.

Since 1918, when Nicolle and Conseil [4] first published their results on the use of serum from convalescents to immunize children who have been in contact with measles, evidence has accumulated as to its protective value. Richardson and Connor [5] in the United States, and Degkwitz [6] at Pfaundler's clinic in Munich, soon followed with publications on the use of the serum of convalescents as a prophylactic against measles. Degkwitz, in a clinic in which there had been 29 per cent mortality for children under 2½ years of age, successfully immunized 700 children with intramuscular injections of serum of convalescents, collected from seven to nine days after defervescence. His results showed that from 2.5 to 3 cc. of serum, injected before the fourth day of exposure, protects a child up to the age of 14 years. Injections on the fifth to sixth day of exposure require from 6 to 7 cc., whereas injections on the seventh day produce uncertain results, and on the eighth day or later have no effect.

Kutter,[7] in dealing with the problem of isolation in institutions, states "that when serum of convalescents is administered within the first four days of incubation, isolation is unnecessary and epidemics are stopped." Stimson [8] states that "except in extraordinary circumstances, measles is more serious the younger the patient," and Marie [9] cites "the great prevalence and danger of measles in the very young, the poorly nourished or weak and children in institutions." Park [10] says that from "5 to 10 cc. of convalescent serum is sufficient, as a rule, to prevent infection. If it does not, it almost certainly so modifies the attack that it is very mild and not liable to lead to complications." Zimmermann,[11] Blackfan, Peterson and Conroy,[12] Zingher,[13] Davis,[14] Brügger,[15] Weaver and Crooks,[16] and many others are unanimous as to the good result obtained from the use of serum of convalescents in producing a passive immunity. Stress is laid, however, by most workers, on the difficulty of procuring a sufficient supply of serum, plasma or blood of convalescents within from seven to nine days of defervescence, to cope with an epidemic in an institution of fair size.

An outbreak of measles occurred at the Home for Hebrew Infants, after a period of freedom of eight years. With a census of 375 children under 6 years of age, among whom were only eleven known immunes, it was thought advisable to administer plasma of convalescents in order either to check an epidemic, or, as first suggested by Debré and Ravina,[17] to modify the disease and thus possibly create an immune population. Since a sufficient amount of serum (collected from six to nine days after defervescence) could not be obtained, this epidemic presented an opportunity to test the value

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* From the Home for Hebrew Infants.

* *Read before the Section* on Pediatrics of the New York Academy of Medicine, Jan. 14, 1926.

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[16] Weaver, G. H., and Crooks, T. T.: Further Observations on the Use of Convalescent Serum in the Prophylaxis of *Measles*, *Wisconsin* M. J. **23:** 555 (March) 1925.

[17] Debré, R., and Ravina, J.: La rougeole modifiée par l'injection préventive de sérum de convalescent, Bull. et mém. Soc. méd. d. hôp. de Paris **47:** 226 (Feb. 9) 1923.

of older plasma, which W. H. Park of the Research Laboratory of the New York City Department of Health generously supplied. The plasma was obtained from sixty adult bleedings, prevented from clotting by sodium citrate (1.5 per cent) and protected from bacterial contamination by oxyquinolin sulphate (chinosol), 1 : 1,500; the blood cells were separated by centrifugalization. When the supply of plasma was exhausted, fresh unmodified whole blood, obtained from measles convalescents in the institution, was used for immunization purposes. The blood from individual donors was not pooled but was injected immediately into the recipients. The amount of plasma injected was from 6 to 10 cc., whereas the amount of whole blood injected was from 5 to 7 cc. All injections were given intramuscularly into the upper and inner quadrant of the buttocks, without any untoward result.

Table 1.—*Incidence of Measles in Forty-Five Children Who Did Not Receive Protective Inoculation* *

	Measles			Interval Between Exposure and Onset of Measles		
Ages of Children	No of Cases	Per Cent	Type	Within Two Weeks	Within 2 to 3 Weeks	Within 3 to 4 Weeks
From 2 to 5 years	38	84	All average severity	18	8	12

* These children all came in intimate contact with others who developed measles

As soon as the first case of measles developed in the institution, the children of two exposed wards were injected. Despite all attempts at isolation, which could not be made complete, children contracted measles in the exposed and other wards and were subsequently injected as exposure occurred. At all times, the children were in intimate contact with others who developed measles, and who therefore were reexposed one or more times. The epidemic lasted for seven months, from July, 1924, to January, 1925. Plasma was used for the injections during the summer months, and whole blood thereafter.

There were forty-five children in the institution who did not receive protective inoculation but came in intimate contact with others who developed measles. Thirty-eight of these, or 84 per cent, contracted measles within one month of exposure. The measles of most of these children was of average severity, characterized by Koplik's spots, marked prodromes, a diffuse confluent maculopapular rash over the whole body, and a rise in temperature to from 103 to 104. The eruption and the temperature usually lasted from three to four days. Some of these children were acutely ill, with marked constitutional reaction and a corresponding protracted convalescence. This will give an idea of the incidence and type of measles to be expected if no protective measures had been undertaken. The complications arising in these unprotected children will be discussed later (table 1).

One hundred and seventy-four children were injected with plasma of convalescents, varying in age from 1 to 4 months after defervescence at the time of collection and stored for from one-half to four and one-half months before injection. Considering the plasma collectively, 78 per cent of all the children were protected for three weeks, and 51 per cent were protected for three months or more. Plasma of convalescents, collected one and three months after defervescence, protected 89 per cent for three weeks. There was very little difference in the protective value of plasma from patients who were convalescent four months at the time of collection, whether it was 1 or 4½ months old at the time of injection. The earlier the plasma is collected after defervescence, the greater is its protection value.

Eighty-eight of a total of 174 children injected with plasma from patients convalescent from one to four months, and stored from one-half to four and one-half months before injection, contracted a mild modified form of measles. It is interesting to note that there were sufficient antibodies in the plasma to modify the measles, even when it developed as late as three months after injection. In the modified form of the disease, Koplik's spots were occasionally absent, whereas the conjunctivitis and coryza were either very mild or frequently absent. The eruption was light colored and discrete, the papules of the size of the head of a pin and less extensive over the extremities. There was a rise in temperature to from 100 to 102, with defervescence and disappearance of the rash within from twenty-four to thirty-six hours. None of the children who had a modified measles appeared to be ill, so much so that it was impossible to keep them in bed at the end of twenty-four hours. Quite a few children, on account of recurrent attacks of bronchopneumonia and gastro-intestinal disturbances, were underweight, anemic and generally below par before they developed a modified measles. These children convalesced from their measles without any untoward result. We feel that the modification of the disease was responsible for this and that, if no protective measures had been undertaken, the results, especially in this type of infant, would have been different (table 2).

Including all plasma that was used, irrespective of its age at collection or at the time of injection, there is very little difference in protective value, when given from the

Table 2.—*Data of One Hundred and Seventy-Four Children Injected with Plasma of Convalescents* *

Interval					Number							
					Protected				Not Protected (Modified Measles)			
					Number		Per Cent		Onset			
Between Defervescence and Collection of Plasma, Months	Between Collection of Plasma and Injection, Months	Ages of Children Injected, Years	Amount Injected, Cc.	Number Injected	For Three Weeks	For Three Months or More	For Three Weeks	For Three Months or More	Within Two Weeks	Within Two to Three Weeks	Within Three to Four Weeks	Within One to Three Months
1	0	2-5	9	16	14	14	88	88	2	0	0	0
3	½	2-5	6	57	51	34	89	58	4	2	14	3
4	1-2	2-5	6	85	59	33	70	38	7	19	8	18
	4½	1-3	10	16	12	5	75	31	0	4	1	6
				174	136	86	78	51	13	25	23	27

* Sixteen months have elapsed since the children of this group were inoculated, and no further cases of measles developed.

fourth to the seventh day of exposure to the disease. Ten cc. of plasma, collected four months after defervescence and injected on the ninth to the thirteenth day of exposure, failed to protect or to modify the measles in six children (table 3).

Ninety-five children were injected with from 5 to 7 cc. of unmodified whole blood, the equivalent of one-half the amount of serum set down by Degkwitz as the minimum requirement for protection. This blood was collected from the children in the institution who had a modified measles. Considering all whole blood that was used, varying in age from 6 days to 3 months after defervescence, 66 per cent of the children were protected for three weeks and 41 per cent for two months or more. Whole blood, collected from six to nine days after defervescence, protected in all cases for three weeks; two to three weeks whole blood protected 62 per cent; one to two months whole blood protected 71 per cent, and two to three months whole blood protected only 28 per cent. Whole blood collected up to three weeks after defervescence, in small amounts, protected half the children on reexposure. Fifty-six of a total of ninety-five children who were injected with whole blood contracted a mild modified form of measles. Although the amount of whole blood injected was not enough to protect, the antibodies sufficed to modify the measles, even when it developed two months after inoculation (table 4).

Table 3.—*Influence of Time of Exposure on Protective Value of Plasma of Convalescents* *

Period of Exposure Before Injection, Days	Number Injected	Number Protected for Three Weeks	Per Cent Protected for Three Weeks
4	71	57	80
5	68	50	74
6	15	11	73
7	20	18	80

* This includes all plasma that was used, varying in age from one to four months.

Table 4.—*Data of Ninety-Five Children Injected with Whole Blood of Convalescents* *

				Number							
				Protected				Not Protected (Modified Measles)			
				Number		Per Cent		Onset			
Interval Between Defervescence and Collection of Blood	Ages of Children Injected, Years	Amount Injected, Cc.	Number Injected	For Three Weeks	For Two Months or More	For Three Weeks	For Two Months or More	Within Two Weeks	Within Two to Three Weeks	Within Three to Four Weeks	Within One to Two Months
From 6 to 9 days.......	½ to 1¼	5 to 7	18	18	17	100	94	0	0	1	0
From 2 to 3 weeks......	1½ to 2	5 to 7	24	15	11	62	46	5	4	4	0
From 1 to 2 months....	1 to 3½	5 to 7	35	25	7	71	20	6	4	0	18
From 2 to 3 months....	2 to 5	5 to 7	18	5	4	28	22	8	5	1	0
			95	63	39	66	41	19	13	6	18

* One year has elapsed since the children of this group were inoculated, and no further cases have developed.

It is necessary to add a word of explanation in regard to the children who form the basis of the data in table 5. This table is intended to show the influence of the time of exposure on the protective value of whole blood of convalescents in small amounts. The group protected 100 per cent, in contradistinction to the other group, were not runabouts but were confined to cribs; they were younger children and received whole blood collected from six to nine days after defervescence. From 5 to 7 cc. of whole blood injected on the tenth to the thirteenth day of exposure to the disease failed to protect five children, and modified the measles in only one instance (table 5).

Nine children, from 1 to 2 years of age, were exposed to a case of measles developing in one of the isolation outbuildings soon after admission to the institution during June, 1925. We were very anxious to prevent further spread of the disease to the exposed children, so as not to interfere with transfer to the main building at the end of the usual three weeks period of isolation. Blood was collected from thirteen children who had had a modified measles six months previously. The blood was citrated and pooled, and 20 cc. was given to each child intramuscularly in the upper and inner quadrant of the buttocks on the fifth day of exposure. Isolation of the child with measles was attempted but was not absolute. None of the exposed children contracted measles.

One of the children during this epidemic, who was not protected by 6 cc. of plasma, had a definite relapse of measles. The relapse occurred within two weeks of the onset of the first attack. Definite Koplik spots were observed by one of us and by two other colleagues during both attacks. With the exception of a mild bronchitis during the relapse, the child made an uneventful recovery from both attacks.

No complications developed in any of the children from the beginning of the epidemic in July to the end of November. Bronchopnuemonia and otitis media complicated the measles during December and January. There was a considerable number of cases of bronchopneumonia in the institution at this time among children who had either been protected or had had measles during the early months of the epidemic. During this period, among 100 children with measles, there were only six instances of complicating bronchopneumonia and ten of otitis media. Five of the bronchopneumonia and eight of the otitis media cases occurred in children who had not received protective inoculation. It is probable that the modification of the measles, by the use of whole blood, was a factor in the lesser incidence of bronchopneumonia. There was no mortality in any of the children who developed measles during this epidemic. The only death was that of a child, who contracted measles after the onset of a severe recurrent bronchopneumonia.

Table 5.—*Influence of Time of Exposure on Protective Value of Whole Blood of Convalescents* *

Period of Exposure Before Injection, Days	Interval Between Defervescence and Collection of Blood	Average Age of Children, Years	Number Injected	Number Protected for Three Weeks	Per Cent Protected for Three Weeks
4	½ to 3 months	2 to 3	77	45	58
5	6 to 9 days	1	18	18	100*

* These children, in contradistinction to the two other groups, were not runabouts but were confined to cribs.

A comparison between this and two previous epidemics in the institution, when no protective measures were undertaken, may be of interest. In 1912, there were numerous complicating cases of bronchopneumonia leading to twelve deaths. In 1917, there were 232 children with measles, among whom there were six deaths. These figures include only the mortality that occurred in the children kept at the institution. It was the custom at that time to transfer the severer cases of measles with bronchopneumonia to the New York City infectious disease hospitals. No record was kept of the mortality in these children. An idea, however, can be gleaned from the findings of Mixsell and Giddings,[18] who report 3,080 cases of measles in these hospitals; 826 of these patients had pneumonia, or one in every four. Four hundred and twenty-four of these, or 51 per cent, died.

CONCLUSIONS

1. It is difficult to procure a sufficient supply of blood of recent convalescents to cope with an epidemic of measles in an institution of fair size.
2. It is practical to bleed recent convalescents in small amounts to inject exposed children during an epidemic in an institution.
3. Plasma of convalescents, collected from one to four months after defervescence, and stored for four and one-half months before injection, protected 51 per cent of the children for three months or more.
4. Plasma of convalescents, collected one month after defervescence, protected 88 per cent of the children for three months or more.
5. Even when plasma of convalescents collected from one to four months after defervescence failed to protect, it modified the measles in 100 per cent of the children.
6. There was very little difference in the protective value of plasma injected from the fourth to the seventh day after exposure. When injected after the seventh day, it did not protect or modify the disease.
7. Whole blood in amounts of from 5 to 7 cc., collected up to three months after defervescence, protected 41 per cent for two months or more.
8. When whole blood collected up to three months after defervescence failed to protect, it modified the measles even when it developed two months after injection.
9. It is possible, but very rare, to have a relapse of measles within a month.
10. Considering the small amounts of plasma and whole blood that were used, an incidence of measles of 53 per cent in the children who were inoculated, as compared to 84 per cent in those who did not receive protective inoculation, is noteworthy.
11. The permanent immunity following the modification of measles is of benefit in an institution caring for children.
12. The decidedly lesser incidence of bronchopneumonia in the children who received protective inoculation, as compared to those who were not inoculated, and no mortality, were noticeable phenomena of this epidemic.
13. Convalescent blood is very valuable in institutions for infants and very young children, and in private families, where exposure to the disease is known. A real control can only be obtained by active immunization with either an attenuated virus or a toxin.

336 West Eighty-Eighth Street—47 Fort Washington Avenue.

Clinical Notes, Suggestions and New Instruments

COMPLETE APHONIA FROM GOITER, WITH RECOVERY

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Dr. J. W. Shuman[1] has reported a case of aphonia from goiter, and quotes Coffey[2] as saying that he does not remember having had a case of aphonia that was relieved by the removal of a goiter, and Crile[2] as never having had a case of complete loss of voice with the exception of malignant cases.

The case reported here will substantiate Dr. Shuman's report.

Miss J. B., consulted me, Sept. 23, 1907, on account of her loss of voice for six months past. There was no pain or cough. The family and personal history were negative as to the complaint. Examination revealed a small adenoma of the thyroid gland on the right side. Laryngologic examination by the late Dr. A. H. Marvin and Dr. S. H. Monson showed a paralysis of the right vocal cord due to pressure from the goiter. The pulse rate was 104. The heart was normal in size and there was no murmur. There was no exophthalmos. Thyroid tablets and iodine ointment were used for three weeks, with a slight return of the voice. Dr. Monson reported that the vocal cord moved better but not quite to the central line. The pulse rate was 96. December 23, she had an exophthalmic goiter. The pulse rate was 107. There was tremor of the eyes and slight bulging. She was referred to Dr. Crile, December 26, who agreed in the diagnosis.

Jan. 4, 1908, thyroidectomy was performed by Dr. G. W. Crile at Lakeside Hospital. The postoperative history was uneventful.

March 12, she had complete return of her voice and no symptoms referable to exophthalmos. The vocal cord was in perfect condition. She enjoyed good health.

July 15, 1926, the patient stated that she was apparently in good health, her voice was perfect, and she had not had any illness since the operation. In view of the modern knowledge of thyroidism, it is interesting to note what effect thyroid extract and iodine had on a simple adenoma.

328 Anisfield Building.

ANGIONEUROTIC EDEMA OF PENIS AND SCROTUM

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A man, aged 34, white, married, with one child, suddenly developed itching of the penis and scrotum, June 20, 1926, followed by a burning sensation of the skin in that area. In about six hours he noticed a swelling of the scrotal sac and edema of the penis, which rapidly increased. In twelve hours there was a very marked edema of the entire penis and scrotum. There was no pain present, the only symptoms being an itching and heavy feeling of the scrotum.

Examination revealed a very distorted, edematous penis, and a greatly thickened, edematous scrotum. There was no history of extramarital exposure, and the last intercourse had taken place about four weeks previously. There was no history of exposure to any poisonous plants, weeds or chemicals.

No sore was present on penis or scrotum. There was no urethral discharge. The prostate and seminal vesicles were normal, as were the testes and epididymides. There was no enlargement of the inguinal glands. The urine was normal except for a very faint trace of albumin and a very few pus cells. The blood pressure was: systolic, 118; diastolic, 74.

The patient had had an attack of angioneurotic edema involving the tongue and pharynx, about three months before.

At noon, June 21, he was given 10 minims (0.6 cc.) of epinephrine hydrochloride, 1:1,000 solution, intramuscularly. Four hours later the edema began to disappear. Within six hours it had disappeared about 50 per cent, and within nine hours there was very little edema remaining. By the morning of June 22, twenty hours after the injection of the epinephrine, the penis and scrotum were normal.

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[18] Mixsell, H. R., and Giddings, E.: A Report of 3,080 Cases of Measles with Special Reference to Pneumonia, South. M. J. **16**: 90 (Feb.) 1923.

[1] Shuman, J. W.: Aphonia from Goiter, J. A. M. A. **86**: 1981 (June 26) 1926.

[2] Personal communication to Dr. Shuman.

Occasionally cases of acute edema of the genitalia present themselves to the physician, the exact cause of which may be underdetermined. I believe that these cases are all a manifestation of an angioneurotic edema, which will respond immediately to one or two intramuscular injections of epinephrine.

This is the second case of this type that I have seen. The other patient also responded immediately to the epinephrine.

1922 Spruce Street.

Special Articles

INSPECTIONS OF INTERN HOSPITALS

A REPORT OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Until recently, hospitals had not reached the stage in regard either to numbers or to development, at which it was thought to be necessary to have them visited by inspectors sent out by the American Medical Association. Such inspections as have been necessary have been well made by voluntary committees appointed by the various state medical societies.

The development of hospitals during the last twenty years has been no less remarkable than that of medical education and practice. Hospitals have increased in numbers from less than 3,000 in 1906 to 6,896 in 1925. The bed capacity also has increased from about 300,000 in 1906 to 837,000 in 1925.

HOSPITALS FOR INTERN TRAINING

The first list of hospitals providing internships was published in 1914 and included not only general but also special hospitals and hospitals for nervous and mental diseases—all institutions, in fact, that were willing to use recent graduates as interns. All the hospitals on the list had been recommended by state advisory committees, and only the notoriously unfit or unethical hospitals were eliminated.

By 1918, through publicity and the work of the several agencies interested in hospitals, much progress had been made in hospital improvement, and the Council prepared a schedule outlining definite standards for intern training. Early in 1919, therefore, the first tentative schedule of "Essentials of a Hospital Approved for Internships" was published and the hospitals which were less capable of providing internships, or which were using interns merely as orderlies, were eliminated from the Council's list. The list published in 1920 continued to list special hospitals as acceptable for interns, although these hospitals were urged to secure as residents those who had previously completed internships in general hospitals.

In 1920 the duties of the Council on Medical Education were enlarged by the House of Delegates to include all the hospital activities of the Association. In 1920, also, a complete survey, begun in the previous year, was completed. By means of a questionnaire, information was obtained which was verified later by the state hospital committees. All teaching hospitals were inspected during the inspection of medical schools, and most of the other hospitals were inspected or recommended by the state committees.

OPPORTUNITY FOR SELECTION OF HOSPITALS

In 1914 there were not enough hospitals willing to use interns to provide places for all medical graduates, and there was no opportunity for selection or for insisting on better clinical teaching. By 1920, however, largely because of the higher qualifications of students being graduated, the number of hospitals seeking interns had become so large that all demands for interns could not be supplied even if the size of the classes graduating had been doubled. This gave the Council the opportunity of limiting its approval to hospitals that were found to be providing a better and more acceptable intern training.

SEPARATION OF SPECIAL FROM GENERAL HOSPITALS

In 1923, when the Council established a list of approved graduate medical schools, it also prepared a list of hospitals in which approved residencies in the specialties were given. Since that year only general hospitals have been approved for interns. Such of the special hospitals as were found to be educationally qualified and which were willing to admit as residents only those who have already completed internships in general hospitals were included among hospitals approved for residencies in the specialties. By 1923, also, through the better knowledge that had been secured regarding all hospitals, only those which were fairly well equipped both educationally and professionally were retained among the hospitals approved for intern training.

INCREASED IMPORTANCE OF THE HOSPITAL INTERNSHIP

With the recent developments in medical education, the hospital internship has become increasingly important. At present, it not only rounds out the student's fundamental medical training but also occupies a place between undergraduate and graduate medical instruction. This makes it necessary that hospitals in which interns are to be trained shall develop a better routine of clinical instruction. The internship now constitutes an additional or fifth year of higher clinical instruction in which the recent graduate[1] still works under the supervision and instruction of competent physicians. Indeed, the internship is now perhaps the most important part of the student's clinical instruction, differing from the work of his third and fourth medical years only in his being granted a larger degree of individual responsibility.

SIZE LIMIT FOR INTERN HOSPITALS

In 1924, as the educational character of internships became of greater importance, the Council passed a ruling limiting hospitals approved for the training of interns to those having 100 beds or more, and having a daily average of seventy-five or more patients. With certain possible but very rare exceptions, it is these larger hospitals which have the properly organized staffs and can provide the interns with a broad training in all varieties of medical practice. A hospital which deals mainly with a specialty is no longer eligible for the general training of interns but, if educationally qualified, may be approved for residencies in the hospital's special field.

PROVISION FOR HOSPITAL INSPECTIONS

By 1924, the hospitals had reached a higher stage of development than at any previous time, and more expert and careful inspections were deemed necessary so that hospitals could be judged with a greater degree of fairness. The Council believed, therefore, that the time had come when all hospitals approved for intern training should be more uniformly inspected, such as could be best done by some representative of the American Medical Association working in cooperation with the state hospital committees. In order to provide for such inspections, the Council, a year ago, asked for an increased appropriation, and this was granted by the Board of Trustees last February. It is contemplated that hereafter every hospital will be duly inspected by a representative of the Council before it is approved for the training of interns. Under this arrangement, also, the Council can keep in closer touch with the various state committees on medical education and hospitals.

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[1] Twelve medical colleges are now requiring that the internship be completed before the M.D. is granted. [See list on page 589.]

THE TECHNIC OF MEDICATION

A SERIES OF ARTICLES ON THE METHODS OF PRESCRIBING AND PREPARING, THE INDICATIONS FOR, AND THE USES OF VARIOUS MEDICAMENTS *

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(Continued from page 491)

LIMITATIONS OF INTRAVENOUS THERAPY

It must be borne in mind that the blood is a fluid tissue of most delicate physical and chemical equilibrium. Water or markedly hypotonic solutions injected intravenously cause destruction of red blood corpuscles (laking) which, if sufficiently extensive, results in chill, fever and sweat, a paroxysm like that of malaria due, essentially, to the same cause; namely, poisoning with blood destruction products. Hence, unless parenteral alterative therapy or osmotherapy is aimed at, injections to be made into the blood stream should be as nearly isotonic with the blood as possible. To be strictly isotonic, sodium chloride solution should be about 0.9 per cent. It may vary between 0.6 and 0.9 per cent without any reaction being produced by reason of anisotonicity. A little reflection will show that this so-called physiologic sodium chloride solution is not really physiologic: for it differs, excepting as regards osmotic tension, enormously in its composition from the blood. More nearly physiologic as far as ion equilibrium is concerned are such solutions as Ringer's or Locke's. Even these, when introduced into the blood in large quantity, cause blood dilution and other changes in ion equilibrium and state of blood colloids that cannot be regarded as innocuous. Still, in the quantities in which these solutions are used therapeutically they must be considered—compatible blood itself excepted—as our least objectionable diluting fluids for vein injections and infusions.

Soon after the use of intravenous injection on a large scale was commenced, it was discovered that the quality of the water employed in the making of the solutions was of importance in the production of unfavorable, chiefly febrile, reactions. It is most especially to the work of Wechselmann [160] that we owe the knowledge that toxic reaction may occur not only from insufficiently sterilized physiologic sodium chloride solution, but even from such solution made from sterilized water that has been kept for some time; and Wechselmann believed the contamination to be bacterial. It may seem surprising that distilled water may serve as a culture medium for micro-organisms; but such is the case, and remarkably minute quantities of bacterial protein suffice, as has been shown by Seibert,[161] to produce fever. It is asserted, however, that reactions may also be produced from distilled water that has had the opportunity to dissolve on standing such metals as lead, copper, nickel, or zinc (Emery, Sicard and Leblanc). Matzenauer has shown that enough alkali may be dissolved out of ordinary glass to produce toxic results. Hence only hard glass, such as Jena glass, should come in prolonged contact with distilled water to be used for intravenous injection; and, to avoid subsequent bacterial contamination, it should be kept hermetically sealed in ampules, now on the market, as demonstrated by Dreyfus,[162] or else prepared just before use.

The fact must not be lost sight of that agents ordinarily inert may become endowed with toxicity when injected intravenously, and that the ordinary pharmacologic action of substances may become overshadowed by the result of blood changes, as has been shown by numerous observers, most systematically perhaps by Hanzlik and his collaborators.[163] The intravenous injection of suspensions in 0.9 per cent sodium chloride solution of such insoluble bodies as barium sulphate or of fullers' earth causes violent reactions and death; and it seems that highly dispersed, almost colloidal bodies are more toxic than if injected as coarser precipitates. Emulsoid colloids, such as agar, acacia and gelatin, are capable of causing on intravenous injection even in dilute solutions profound blood changes, violent symptoms, and death.

The serums of many of the lower animals produce hemolysis in human blood. Even human blood serum may dissolve or agglutinate human blood corpuscles. Hence the necessity for careful selection and testing of the donor in blood transfusion. On the fact that foreign protein is pyrogenic and irritating to the system is based parenteral alterative therapy.

Definite changes in the blood are produced by hypertonic solutions of sodium chloride, 10 per cent; methenamine, 40 per cent, and urea, 18 per cent. On the other hand, calcium chloride, 9 per cent solution, seems relatively harmless. Slight or no changes are produced by sucrose, 85 per cent, or dextrose, 50 per cent. On the use of the latter chiefly is based "intravenous osmotherapy."

Ions may display an entirely different effect when injected intravenously than when given perorally. Thus, while it makes little difference whether we give potassium or sodium salts, by mouth, potassium is a neuromuscular depressant on vein injection, while the sodium ion is relatively harmless. That calcium, which is practically harmless by mouth, is liable to be toxic on intravenous injection has already been mentioned. Magnesium ions when swallowed are cathartic, because of nonabsorption; when given intravenously they depress the nervous system to such an extent that vein infusion of magnesium sulphate, 5 per cent solution in quantities of 30 cc. or more, has been used with some success as an antispasmodic in tetanus.

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* This is the thirty-fourth of a series of articles on "The Technic of Medication." When completed, the articles will be assembled in book form.

160. Wechselmann: München. med. Wchnschr., 1911, p. 1510; Berl. klin. Wchnschr., 1914, no. 7.

161. Seibert, Florence B.: Fever Producing Substances Found in Some Distilled Waters, Am. J. Physiol. 67:90 (Dec.) 1923.

162. Dreyfus, G. L.: Steriles, dauernd haltbares "Ampullenwasser" für intravenöse Salvarsan Injectionen, München. med. Wchnschr. 67:95 (Jan. 23) 1920.

163. Hanzlik, P. J.; DeEds, F., and Tainter, M. L.: "Blood and Symptomatic Changes Following the Intravenous Administration of a Variety of Agents and Solutions," Ann. Report. Therap. Research Com., A. M. A., Vol. 14, 1925, p. 25.

Emboli, to be dangerous, must be present in the circulation in rather large quantities. Small quantities have been introduced without appreciable ill effect. A sufficiently large shower of emboli is followed by cyanosis, dyspnea, cough, and weak and rapid pulse. Though, of course, prevention of air embolism is a part of the technic of vein injection, Larned[164] has shown that the danger of air embolism has been grossly exaggerated. That the danger from oil embolism is real may be learned from the report by Fabricius-Møller[165] of two fatal cases after vein injection of 5 cc. and even of 1 cc. of camphorated oil. Intravenous injection of emulsions, such as milk, is likewise not permissible because of embolism. Protein precipitants, such as copper sulphate or mercuric chloride, produce violent reactions because of embolism when injected intravenously. Though the latter has been employed therapeutically by vein injection in small dosage, mercuric oxycyanide (obtainable in ampules containing 0.016 Gm.) is safer, as it does not act on protein to the same extent; but even its solution is better mixed with blood by aspirating some of it into the syringe and then injecting the mixture.

Anaphylaxis is to be dreaded most especially in the treatment of allergic persons. Hence in asthmatic and other allergic patients, intravenous injection should, if possible, be avoided. Before proteins, such as antitoxic serums, are injected into veins, especially in persons who have previously been given serum injections, it is always best to test for hypersusceptibility by endermic instillation of a small amount. If a wheal appears within half an hour, intravenous injection should be abandoned, or else desensitization practiced by subcutaneous injection of a very minute amount, say 0.025 cc., and doubling the dose every half hour until 1 cc. is given. Then 0.1 cc. is injected intravenously, and this dose is doubled every half hour until the desired quantity has been administered. To combat anaphylactic symptoms promptly, the physician should be ready to inject instantly 0.5 cc. of epinephrine solution.

Definite contraindications to voluminous vein infusion are dropsy, pulmonary edema and marked cardiac insufficiency. Whenever one is doubtful of the integrity of the myocardium, the quantity of fluid infused must be limited so as to avoid overloading the right heart. An almost constant premonitory symptom of acute dilatation of the heart is a dry cough, which should be heeded as a danger signal, as is also the appearance of pulmonary râles.

In view of all these risks and limitations, even the most ardent advocates of intravenous therapy ought to agree on the proposition that the intravenous administration of a remedy is not justifiable if satisfactory results can be secured from giving it by some other channel.

INTRACARDIAC INJECTION

This method of appeal to a failing heart, discovered about fifty years ago by Schiff, a German physiologist, constitutes the most powerful and prompt form of heart stimulation known, and therefore deserves serious consideration.

Vogt[166] reports fifteen successful cases, in some of which there had been respiratory standstill for five minutes, and in one case even fifteen minutes; and Bodon[167] was able to report ninety cases, with lasting results in twenty-three patients. Since then there have been reports of a considerable number of additional instances of successful employment of this procedure. Intracardiac injection is the simplest and most certain method to cause the motor of the circulatory apparatus to resume motion and to effect resuscitation. The fact that the heart is "the first to move, the last to die" gives it its justification. It has been shown experimentally that the limit of recovery lies not so much with the heart as with the more sensitive brain, which does not tolerate circulatory standstill for more than a few minutes. Hence the importance of acting immediately and resolutely in any case of sudden cessation of the heart beat, if the other organs are still in fairly good functional condition.

The chief remedy for intracardial injection is epinephrine, the effect of which on the heart is nothing less than wonderful. This drug was used in nine of Vogt's fifteen successful cases. Quite as important as its effect is its harmlessness, even when injected into the heart muscle itself. This cannot be said of other circulatory stimulants, such as camphor, caffeine, digitalis or strophanthin, all of which are liable to injure the muscle into which they are injected. A dose of 1 cc. is generally considered a maximum, though as much as 5 cc. has been employed. Next in value is the solution of pituitary, which, though feebler in action, is possibly safer in cases of arteriosclerosis, myocardial degeneration, the heart of hypersensitive thyrotoxic patients and in nephroses.

The following technic is advised: Injection is made into the fourth or fifth intercostal space just to the left of the sternum. After iodine disinfection, the needle is inserted at the upper margin of the fifth rib, starting along the edge of the sternum until its posterior surface is reached. Now its point is turned toward the midline as it is pushed through the heart until the resistance of the heart muscle ceases suddenly. Entrance into the heart is indicated by the appearance of blood in the syringe. The imparting to the needle of even feeble motion by the heart is a favorable sign. To avoid pneumothorax and pneumopericardium, the needle is to be inserted and withdrawn while attached to the syringe; and when, as is nearly always the case, this injection is done during artificial respiration, it should be performed in the expiratory phase.

(To be continued)

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164. Larned, E. R.: Surg. Gynec. Obst., December, 1905.
165. Fabricius-Møller: Ugesk. f. Læger **85**: 393 (May 31) 1923.
166. Vogt, E.: München. med. Wchschr. **68**: 732 (June 17) 1921.
167. Bodon, Carl: Intracardiac Injection of Adrenalin, Lancet **1**: 586 (March) 1923.

Bacillus Acidophilus and Surface Tension.—A recent report, which appeared in The Journal, shows that the value of *Bacillus acidophilus* therapy is still an open question and that one of the uncertain factors is the identity of the organism itself. *Bacillus acidophilus* resembles similar organisms, with some of which implantation in the intestine cannot be secured. Of this innocuous group, *Bacillus bulgaricus* is the most widely known and is one of the most difficult to differentiate from *Bacillus acidophilus*. A method of identification recently described by Albus and Holm (*J. Bacteriol.* **12**:13 [July] 1926) depends on the effect of surface tension. It was found that, with sodium ricinoleate as the depressant, growth of *Bacillus bulgaricus* was inhibited at a surface tension lower than 40 dynes, whereas *Bacillus acidophilus* grew well in the same mediums depressed to 36 dynes. The authors suggest that it is the surface tension depressant effect of bile salts that makes possible implantation of *Bacillus acidophilus* in the intestine.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1926 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The statistics herewith presented for the year ending June 30, 1926, are based on reports received from the medical colleges and other reliable sources. We acknowledge here the kind courtesy and cooperation of the officers of the colleges who have made the compilation of these statistics possible.

STATISTICS OF COLLEGES

Table 1, pages 566, 567, gives the colleges in session during 1925-1926; the population of the city; the rating given to the college by the Council on Medical Education and Hospitals; the number of students, men and women, registered during the year; the number of 1926 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 574 are given the essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, pages 568, 569, shows from what states the students came who were in attendance at each medical college during the session of 1925-1926. The influence of the proximity of the medical school is seen in the fact that the states having medical colleges contribute larger numbers of students than those which have no medical colleges. This is shown by the dark zone of figures running diagonally down the page. It will be interesting to compare this table with the large tables based on state board examinations,[1] which show the distribution of the alumni of each college. The college that has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York, with 2,576. Pennsylvania contributed 1,457, and Illinois, 1,350. The next states, in the order of the number contributed, are: Ohio, 1,070; Massachusetts, 771; Texas, 686; Michigan, 684, and California, 612. Of the twelve states that have no medical schools, four furnished more than 100 students, these being New Jersey, 579; Washington, 129; Florida, 127, and Rhode Island, 101. Of these noncollege states, Wyoming had only 13; Nevada, 12, and New Mexico, 9. There were 131 students from Hawaii, Porto Rico and the Philippine Islands, and 379 students from foreign countries. The average enrolment of foreign students each year since the World War has been 322.

NUMBER OF STUDENTS BY CLASSES

In table 3, page 570, the students enrolled in each college are shown by classes. The total attendance for the first year was 5,753, or 261 more than last year, and 593 more than in 1924. The second year attendance was 4,779, or 364 more than last year and 338 more than in 1924. The third year attendance was 4,201, or 65 more than last year but 129 less than in 1924. The enrolment of the fourth year class was 4,107, or 50 less than last year and 310 more than in 1924.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (table 4) in the United States for the year ending June 30, 1926, excluding premedical, special and postgraduate students, was 18,840, an increase of 640 over last year. This is the largest enrolment of students since 1911. There has been a steady increase in enrolment since 1919. Of the total number of students last year, 18,092 were in the nonsectarian (regular) colleges, 458 at the two remaining homeopathic colleges, 253 at the two remaining eclectic colleges, and 37 at the one nondescript college. The Middlesex College of Medicine and Surgery definitely states in its current announcement that it is an eclectic school.

TABLE 4.—*Medical College Attendance*

Year	Nonsectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880	9,776	1,220	830	...	...	11,826
1890	13,521	1,164	719	...	...	15,404
1900	22,710	1,909	522	...	...	25,171
1904	23,662	1,309	1,014	123	234	28,142
1910	20,136	867	455	49	19	21,526
1911	18,414	890	433	49	...	19,786
1912	17,277	827	308	...	...	18,412
1913	15,919	850	256	...	...	17,015
1914	15,438	794	270	...	...	16,502
1915	13,914	736	241	...	...	14,891
1916	13,121	638	263	...	...	14,012
1917	12,925	589	250	...	...	13,764
1918	12,727	540	138	...	225	13,630
1919	12,137	397	86	...	310	12,930
1920	12,930	386	93	...	389	13,798
1921	13,627	440	98	...	301	14,466
1922	14,742	517	85	...	291	15,635
1923	16,299	341	99	...	221	16,960
1924	17,034	379	127	...	188	17,728
1925	17,652	410	148	...	...	18,200
1926	18,092	458	253	...	37	18,840

NUMBER OF MEDICAL GRADUATES

The total number of graduates (table 5) for the year ending June 30, 1926, was 3,962, or 12 less than last year. The total would have been 4,037, but two medical schools, the College of Medical Evangelists and the Chicago Medical School, withhold graduation from their fourth year classes until a year's internship has been completed. The number of graduates from the nonsectarian colleges this year was 3,801, or 55 less than last year. The number from the homeopathic colleges was 80, the same as last year, and from the eclectic colleges there were 64, or 26 more than last year. The number of graduates from the nondescript or semi-osteopathic college was 17.

(Continued on page 570)

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[1] State Board Number, J. A. M. A. **86**: 1534-1541 (May 15) 1926.

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City Where College is Located (Census Bureau Estimate of 1925)	Classification by Council on Medical Education	No. of Students Registered 1925-26		Graduates 1926		Grads. with A.B., B.S., or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1926-27		Marginal Number
				Men	Women	Men	Women				1st Year	2d Year	3d Year	4th Year		Begins 1926	Ends 1927	
	ALABAMA			**106**	**1**	..	..	..										
1	University of Alabama School of Medicine, University (Tuscaloosa)*..	13,083	A	106	1	..	..	..	14	35	222	222	...	...	Clyde Brooks, M.D., Dean	Sept. 13	May 31	1
	ARKANSAS			**155**	**1**	**24**	..	**16**										
2	University of Arkansas Medical Department, Little Rock[1]	74,216	A	155	1	24	..	16	58	34	85	90	75	100	Morgan Smith, M.D., Dean	Sept. 16	June 2	2
	CALIFORNIA			**545**	**79**	**66**	**12**	**64**										
3	College of Medical Evangelists, Los Angeles[2]	576,673	A	233	25	2	1	2	163	36	236	233	316	286	Percy T. Magan, M.D., Dean	Sept. 6	May 29	3
4	Stanford University School of Medicine, San Francisco	557,530	A	143	16	23	4	27	173	34	261	261	261	261	William Ophüls, M.D., Dean	Oct. 1	June 15	4
5	University of California Medical School, San Francisco[1]	557,530	A	169	38	41	7	35	236	36	290	218	235	225	L. S. Schmitt, M.D., Dean	Aug. 13	May 11	5
	COLORADO			**156**	**13**	**32**	**5**	**17**										
6	University of Colorado School of Medicine, Denver[1]	280,911	A	156	13	32	5	17	73	34	206	221	105	185	Maurice H. Rees, M.D., Dean	Sept. 27	June 10	6
	CONNECTICUT			**190**	**8**	**47**	**2**	**39**										
7	Yale University School of Medicine, New Haven	178,927	A	190	8	47	2	39	157	34	305	300	300	320	Milton C. Winternitz, M.D., Dean	Sept. 30	June 15	7
	DISTRICT OF COLUMBIA			**756**	**16**	**142**	**2**	**67**										
8	Georgetown University School of Medicine, Washington	497,906	A	276	..	43	..	25	126	33	255	250	250	260	George M. Kober, M.D., Dean	Sept. 27	June 8	8
9	George Washington University Medical School, Washington	497,906	A	258	11	45	1	10	166	33	319	316	316	316	William C. Borden, M.D., Dean	Sept. 27	June 8	9
10	Howard University School of Medicine, Washington	497,906	A	222	5	54	1	32	60	34	213	208	208	215	Edward A. Balloch, M.D., Dean	Oct. 4	June 17	10
	GEORGIA			**327**	**5**	**80**	**1**	**50**										
11	Emory University School of Medicine, Atlanta	222,963	A	197	..	57	..	41	130	33	253	233	228	253	Russell H. Oppenheimer, M.D., Dean	Sept. 29	June 7	11
12	University of Georgia Medical Department, Augusta[1]	55,245	A	130	5	23	1	9	62	33	105	100	100	100	William H. Goodrich, M.D., Dean	Sept. 27	June 4	12
	ILLINOIS			**1855**	**107**	**436**	**21**	**345**										
13	Chicago Medical School, Chicago[3]	2,995,239	C	137	10	31	1	9	110	42	270	280	305	315	Bayard Holmes, Jr., M.D., Dean	Oct. 4	Aug. 20	13
14	Loyola University School of Medicine, Chicago	2,995,239	A	355	14	62	1	45	113	33	300	300	300	300	Louis D. Moorhead, M.D., Dean	Oct. 4	June 11	14
15	Northwestern University Medical School, Chicago	2,995,239	A	415	..	112	..	58	208	35	300	300	300	300	Irving S. Cutter, M.D., Dean	Oct. 1	June 20	15
16	Rush Medical College (University of Chicago)	2,995,239	A	482	56	130	11	137	237	34	280	270	290	297	Ernest E. Irons, M.D., Dean	Oct. 1	June 14	16
17	University of Illinois College of Medicine, Chicago[1]	2,995,239	A	466	27	101	8	96	208	33	165	165	165	165	David John Davis, M.D., Dean	Oct. 4	June 11	17
	INDIANA			**366**	**11**	**79**	**1**	**78**										
18	Indiana University School of Medicine, Bloomington-Indianapolis[1]...	358,819	A	366	11	79	1	78	200	36	175	175	175	175	Charles P. Emerson, M.D., Dean	Sept. 13	June 8	18
	IOWA			**389**	**13**	**71**	**2**	**52**										
19	State University of Iowa College of Medicine, Iowa City[1]	11,691	A	389	13	71	2	52	80	34	186	186	186	186	Lee Wallace Dean, M.D., Dean	Sept. 20	June 6	19
	KANSAS			**166**	**13**	**33**	**4**	**27**										
20	University of Kansas School of Medicine, Lawrence-Kansas City[1][4]...	483,262	A	166	13	33	4	27	116	36	125	100	106	110	Harry Roswell Wahl, M.D., Dean	Sept. 14	June 6	20
	KENTUCKY			**255**	**5**	**59**	..	**30**										
21	University of Louisville School of Medicine, Louisville	259,259	A	255	5	59	..	30	112	37	275	275	280	300	Stuart Graves, M.D., Dean	Sept. 13	June 16	21
	LOUISIANA			**393**	**15**	**80**	**3**	**45**										
22	Tulane University of Louisiana School of Medicine, New Orleans	414,493	A	393	15	80	3	45	141	34	295	285	270	300	Charles C. Bass, M.D., Dean	Sept. 23	June 8	22
	MARYLAND			**605**	**38**	**130**	**7**	**101**										
23	Johns Hopkins University School of Medicine, Baltimore	796,296	A	239	33	62	5	67	255	33	410	410	410	410	Lewis H. Weed, M.D., Dean	Sept. 27	June 7	23
24	University of Maryland Sch. of Med. and Coll. of P. & S., Baltimore[1]	796,296	A	366	5	68	2	34	208	33	280	280	280	280	J. M. H. Rowland, M.D., Dean	Sept. 27	June 4	24
	MASSACHUSETTS			**1272**	**54**	**303**	**19**	**154**										
25	Boston University School of Medicine, Boston	781,529	A	179	21	45	4	24	113	36	326	326	326	336	Alexander S. Begg, M.D., Dean	Sept. 20	June 13	25
26	College of Physicians and Surgeons, Boston[5]	781,529	C	26	2	7	2	..	32	..	125	155	125	120	....	....	....	26
27	Harvard University Medical School, Boston	781,529	A	507	..	128	..	116	332	36	305	300	300	300	David L. Edsall, M.D., Dean	Sept. 27	June 23	27
28	Tufts College Medical School, Boston	781,529	A	453	20	98	12	14	170	35	305	300	300	310	Stephen Rushmore, M.D., Dean	Sept. 22	June 11	28
29	Middlesex College of Medicine and Surgery, Cambridge.—E.	120,053	C	107	2	25	1	..	..	..	185	175	175	175	....	....	....	29
	MICHIGAN			**701**	**39**	**153**	**9**	**60**										
30	University of Michigan Medical School, Ann Arbor[1][6]	22,178	A	506	35	105	7	56	92	36	192	187	187	185	Hugh Cabot, M.D., Dean	Sept. 28	June 20	30
31	Detroit College of Medicine and Surgery, Detroit[1]	1,242,044	A	195	4	48	2	4	143	35	200	200	200	200	W. H. MacCraken, M.D., Dean	Sept. 30	June 18	31
	MINNESOTA			**363**	**26**	**88**	**8**	**96**										
32	University of Minnesota Medical School, Minneapolis[1]	425,435	A	363	26	88	8	96	341	34	192	192	192	192	Elias P. Lyon, M.D., Dean	Sept. 27	June 11	32
	MISSISSIPPI			**63**	**1**	..	..	..										
33	University of Mississippi School of Medicine, University (Oxford)*[1]..	2,150	A	63	1	..	..	..	17	36	163	163	...	...	Joseph O. Crider, M.D., Dean	Sept. 15	June 7	33
	MISSOURI			**956**	**20**	**211**	**4**	**135**										
34	University of Missouri School of Medicine, Columbia *[1]	10,631	A	75	3	..	..	..	29	35	110	113	...	...	Guy L. Noyes, M.D., Dean	Sept. 15	June 4	34
35	Kansas City University of Phys. and Surgs., Kansas City.—N.[4][5]	483,262	C	37	..	17	..	..	17	..	200	200	200	200	....	....	....	35
36	St. Louis College of Physicians and Surgeons, St. Louis	821,543	C	47	3	11	2	..	..	..	210	205	205	230	....	....	....	36
37	St. Louis University School of Medicine, St. Louis	821,543	A	502	..	107	..	93	240	32	325	325	325	325	Hanau W. Loeb, M.D., Dean	Oct. 1	June 1	37
38	Washington University School of Medicine, St. Louis	821,543	A	295	14	73	2	42	189	34	349	344	344	349	McKim Marriott, M.D., Dean	Sept. 23	June 7	38
	NEBRASKA			**454**	**14**	**103**	**1**	**83**										
39	Creighton University School of Medicine, Omaha	211,768	A	192	2	38	..	32	78	33	230	215	215	215	Hermann von W. Schulte, M.D., Dean	Sept. 23	June 2	39
40	University of Nebraska College of Medicine, Omaha	211,768	A	262	12	65	1	51	112	33	185	170	160	160	J. Jay Keegan, M.D., Dean	Sept. 20	June 4	40

	NEW HAMPSHIRE			**35**	..	..	..	..										
41	Dartmouth Medical School, Hanover *	1,551	A	15	..	..	..	..	16	36	100	110	...	...	*Colin C Stewart, Ph D, Act Dean*	Sept 22	June 21	41
	NEW YORK			**2070**	**164**	**446**	**35**	**252**										
42	Albany Medical College, Albany	117,820	A	88	5	16	..	6	100	31	320	305	305	305	Thomas Ordway, M D, Dean	Sept 28	June 13	42
43	University of Buffalo Medical Department, Buffalo	538,016	A	211	11	15	2	9	163	31	327	317	317	327	C Sumner Jones, M D, Dean	Sept 20	June 8	43
44	Columbia University College of Phys and Surgs, New York City	5,927,625	A	316	55	85	11	81	131	33	527	518	512	532	William Darrach, M D, Dean	Sept 22	June 1	44
45	*Cornell University Medical College, New York City*	5,927,625	A	233	11	54	9	62	200	31	510	500	500	525	Walter L Niles, M D, Dean	Sept 27	June 9	45
46	Long Island College Hospital, New York City-Brooklyn	2,150,687	A	382	12	88	2	10	186	33	413	416	435	410	Adam M Miller, A M, Dean	Sept 27	June 4	46
47	New York Homeopathic *Medical College and Flower Hospital*—H	5,927,625	B	205	9	38	3	1	107	31	430	405	405	410	Claude A Burrett, M D, Dean	Sept. 17	May 7	47
48	University and Bellevue Hospital Medical College, New York City	5,927,625	A	390	18	83	5	14	226	30	555	523	512	520	Samuel A Brown, M D, Dean	Sept 15	June 8	48
49	University of Rochester School of Medicine, Rochester	316,786	A	20	2		.	.	95	36	300	300	300	300	George H Whipple, M D, Dean	Sept 23	June 20	49
50	Syracuse University College of Medicine, Syracuse	182,003	A	162	11	37	3	9	141	36	330	330	330	310	Herman G Weiskotten, M D, Dean	Sept 17	June 13	50
	NORTH CAROLINA			**118**	**2**	..	..	..										
51	*University of North Carolina School of Medicine, Chapel Hill**	1,183	A	78	2	..	..	..	0	31	220	220	...	..	I H Manning, M D, Dean	Sept. 17	June 2	51
52	Wake Forest College School of Medicine, Wake Forest*	1,425	A	10	..	..	..	..	18	35	208	208	...	...	Thurman D Kitchin, M D, Dean	Sept 14	June 3	52
	NORTH DAKOTA			**50**	**1**	..	..	..										
53	Univ. of North Dakota School of Med, University (Grand Forks)* [1]	14,811	A	50	1				15	36	60	60	...	...	Harley E French, M D, Dean	Sept 18	June 14	53
	OHIO			**901**	**41**	**205**	**12**	**133**										
54	Eclectic Medical College, Cincinnati—E	409,333	B	143	1	37	1	7	44	32	220	210	210	210	Rolla L Thomas, M D, Dean	Sept 16	May 16	54
55	University of Cincinnati College of Medicine	409,333	A	241	14	50	5	31	208	35	373	373	350	330	Arthur C Bachmeyer, M D, Dean	Sept 27	June 18	55
56	Western *Reserve* University School of Medicine, Cleveland	936,485	A	205	15	45	3	18	170	34	325	310	300	310	Carl A Hamann, M D, Dean	Sept. 30	June 16	56
57	Ohio State University College of Medicine, Columbus [1]	279,836	A	309	11	73	3	14	111	34	180	180	180	180	Eugene F McCampbell, M D, Dean	Sept 28	June 14	57
	OKLAHOMA			**155**	**10**	**38**	**2**	**35**										
58	University of Oklahoma School of Medicine, Norman-Oklahoma City [1]	101,150	A	155	10	38	2	35	89	35	50	75	25	25	LeRoy Long, M D, Dean	Sept. 16	June 7	58
	OREGON			**215**	**9**	**47**	**2**	**30**										
59	University of Oregon Medical School, Portland [1]	282,383	A	215	9	47	2	30	156	34	200	195	190	190	Richard B Dillehunt, M D, Dean	Sept. 23	June 13	59
	PENNSYLVANIA			**1717**	**132**	**402**	**41**	**223**										
60	Hahnemann *Medical College and Hospital* of Philadelphia—H	1,979,364	A	211	..	9	..	15	122	33	325	325	325	325	William A Pearson, M D., Dean	Sept 27	June 2	60
61	Jefferson Medical College of Philadelphia	1,979,364	A	579	.	111	..	57	180	34	[illegible]	325	325	325	Ross V Patterson, M D, Dean	Sept 22	June 3	61
62	Temple University School of Medicine, Philadelphia	1,979,364	B	223	1	51	..	4	134	30	295	280	280	280	Frank C Hammond, M D, Dean	Sept 21	June 16	62
63	University of Pennsylvania School of Medicine, Philadelphia [6]	1,979,364	A	150	17	120	7	92	250	35	420	420	420	420	William Pepper, M D, Dean	Sept 24	June 15	63
64	Woman's Medical College of Pennsylvania, Philadelphia	1,979,364	A		100	..	29	21	71	33	255	275	250	260	Martha Tracy, M D, Dean	Sept 29	June 8	64
65	University of Pittsburgh School of Medicine, Pittsburgh	631,563	A	215	11	12	5	31	103	35	328	313	313	323	Raleigh R Huggins, M.D, Dean	Sept. 20	June 8	65
	SOUTH CAROLINA			**149**	**7**	**35**	**3**	**16**										
66	*Medical College* of the *State of South Carolina*, Charleston	73,125	A	119	7	35	3	16	60	33	175	175	175	175	*Robert Wilson, M D, Dean*	*Sept 23*	*June 2*	66
	SOUTH DAKOTA			**35**	**1**	..	..	..										
67	University of South Dakota College of Medicine, Vermillion*	2,590	A	35	1		..		11	35	100	100	...	...	George R Albertson, M D, Act Dean	Sept 15	June 6	67
	TENNESSEE			**634**	**7**	**145**	**1**	**72**										
68	University of Tennessee College of Medicine, Memphis [1]	174,533	A	227	4	46	1	22	152	35	132	127	127	152	Orren W Hyman, Ph D, Admin Officer	Sept 27	June 16	68
69	Meharry Medical College, Nashville	136,220	A	224	1	17	..	23	15	32	173	165	165	185	John J Mullowney, M D, President	Oct 1	May 25	69
70	Vanderbilt University School of Medicine, Nashville	136,220	A	183	2	52	.	27	118	31	215	215	215	210	G Canby Robinson, M D, Dean	Sept 22	June 8	70
	TEXAS			**476**	**28**	**101**	**7**	**59**										
71	Baylor University College of Medicine, Dallas	194,450	A	264	14	37	2	20	108	32	268	258	218	218	Walter H Moursund, M D, Dean	Oct 1	May 30	71
72	University of Texas School of Medicine, Galveston [1]	48,375	A	212	12	64	5	39	50	32	198	173	175	173	Henry Hartman, M D, Act Dean	Oct. 1	May 31	72
	UTAH			**47**	..	..	..	.										
73	University of Utah School of Medicine, Salt Lake City*	130,910	A	47	..		.	.	18	33	150	150	...	...	Ralph O Porter, M D, Dean	Sept. 27	June 6	73
	VERMONT			**96**	**8**	**24**	**2**	**10**										
74	University of Vermont College of Medicine, Burlington [1] [6]	24,089	A	96	8	24	2	10	10	30	215	215	215	215	James N Jenne, M D, Dean	Sept. 15	June 16	74
	VIRGINIA			**569**	**14**	**121**	**5**	**49**										
75	Medical College of Virginia, Richmond	186,403	A	434	8	78	3	21	141	34	295	295	286	316	Manfred Call, M D, Dean	Sept 14	May 31	75
76	University of Virginia Department of Medicine, Charlottesville [1]	11,211	A	235	6	43	2	28	17	36	265	265	240	250	James C Flippin, M D, Act Dean	Sept 16	June 14	76
	WEST VIRGINIA			**115**	**2**	..	..	.										
77	West Virginia University School of Medicine, Morgantown* [1]	13,811	A	115	2		.		17	35	95	95	...	..	John N Simpson, M D, Dean	Sept 21	June 14	77
	WISCONSIN			**450**	**32**	**49**	**1**	**50**										
78	University of Wisconsin Medical School, Madison [1] [7]	46,385	A	194	25		..	..	107	36	100	100	100	100	Charles R Bardeen, M D, Dean	Sept. 22	June 20	78
79	*Marquette University* School of Medicine, Milwaukee	509,192	A	256	7	49	1	50	138	35	313	303	303	283	Eben J. Carey, M D, Dean	Sept. 27	June 15	79
	CANADA [8]			**2456**	**110**	**409**	**18**	**70**										
80	University of Alberta Faculty of Medicine, Edmonton, Alta	58,821	..	105	9	14	3	4	82	30	202	202	202	202	Allan C Rankin, M D, Dean	Sept 29	May 13	80
81	Dalhousie University Faculty of Medicine, Halifax, N. S	58,372	..	116	5	35	..	3	60	32	200	200	200	200	John Stewart, M D, Dean	Sept 14	May 17	81
82	Queen's *University Faculty of Medicine*, Kingston, Ont	21,753	..	309	.	52	..	12	48	32	118	151	140	100	J. C Connell, M D, Dean	Sept. 29	May 25	82
83	University of Toronto Faculty of Medicine, Toronto, Ont	521,893	..	715	62	182	11	50	266	32	163	163	163	163	Alexander Primrose, M D, Dean	Sept 28	May 28	83
84	University of Western Ontario Medical School, London, Ont	60,959	..	107	2	10	..	1	71	33	110	110	118	173	Paul S McKibben, Ph D, Dean	Sept 22	May 27	84
85	McGill University Faculty of Medicine, Montreal, Que	618,506	..	173	19	95	2	17	109	30	277	232	232	232	Charles F Martin, M D, Dean	Sept. 20	April 29	85
86	University of Montreal Faculty of Medicine, Montreal, Que	618,506	..	172	1	12	..	..	89	36	207	200	242	214	Louis de Lotbinière Harwood, M D, Dean	Sept. 15	June 17	86
87	Laval University Faculty of Medicine, Quebec, Que	95,193	..	220		30	..	..	50	34	150	150	150	150	Arthur Vallée, M.D, Secretary	Sept 15	June 1	87
88	University of Manitoba Faculty of Medicine, Winnipeg, Man	179,087	..	249	12	51	2	3	137	32	180	175	185	185	S Willis Prowse, M D, Dean	Sept 6	May 30	88

E—Eclectic; H—Homeopathic; N—Nondescript.

* Gives only the first two years of the medical course

[1] The following universities make an additional charge for nonresidents: Arkansas, $100; California, $300; Colorado, $105; Georgia, $100; Illinois, $35; Indiana, $75; Iowa, $171; Kansas, $10; Maryland, $100; Michigan, $80; Detroit, $85; Minnesota, $30; Mississippi, $50; Missouri, $10; North Dakota, $10; Ohio, $105; Oklahoma, $120; Oregon, $10; Tennessee, $100; Texas, $150; Vermont, $75; Virginia, $20; West Virginia, $150; Wisconsin, $125.

[2] The College of Medical Evangelists had but three graduates because the fourth year class in 1926 is required to complete a hospital internship before receiving their M D. degrees

[3] The Chicago Medical School graduates include fourteen 1925 graduates whose diplomas were recalled and regranted after completing hospital internships

[4] The population given is for Kansas City, Kansas, and Kansas City, Missouri.

[5] The number of students is approximate; the number of graduates exact.

[6] Three medical schools make a lower tuition charge for women than for men The charge is $7 less each year at the University of Michigan, $15 less at the University of Pennsylvania and $5 less at the University of Vermont.

[7] The third year of the medical course was given during the session of 1925-26 and in the fall of 1926 and thereafter the entire four year course will be given.

[8] The population of Canadian cities, where medical colleges are located, was taken from the "Sixth Census of Canada, 1921."

TABLE 2—DISTRIBUTION OF

Marginal Number	NAME OF COLLEGE	1 Alabama.........273	2 Arizona.........24	3 Arkansas.........153	4 California.........612	5 Colorado.........200	6 Connecticut.....275	7 Delaware.........27	8 Dist. Columbia...187	9 *Florida*.........127	10 Georgia.........303	11 Idaho.........38	12 Illinois.........1,350	13 Indiana.........503	14 Iowa.........559	15 Kansas.........270	16 Kentucky.........267	17 Louisiana.........181	18 Maine.........64	19 Maryland.........252	20 Massachusetts....771	Marginal Number
1	University of Alabama School of Medicine	79	....	....	....	....	....	....	....	2	4	....	....	....	1	....	1	1	....	....	....	1
2	University of Arkansas Medical Department	1	....	94	1	....	1	....	....	....	2	....	....	2	4	5	1	1	....	....	....	2
3	College of Medical Evangelists	....	3	....	65	4	....	....	12	2	....	2	11	2	4	5	....	2	1	....	2	3
4	Stanford University School of Medicine	....	....	....	135	1	....	....	....	....	....	5	1	1	....	1	....	....	....	....	....	4
5	University of California Medical School	....	....	....	203	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	5
6	University of Colorado School of Medicine	....	....	....	3	141	....	....	....	....	....	2	1	....	1	5	1	....	....	....	....	6
7	Yale University School of Medicine	....	....	....	4	2	89	....	2	....	....	....	1	....	1	1	....	....	5	1	8	7
8	Georgetown University School of Medicine	....	....	....	2	....	13	....	36	3	....	....	....	....	....	....	....	....	3	7	16	8
9	George Washington University Medical School	....	....	....	....	....	7	....	72	....	....	3	2	....	....	1	3	....	1	13	1	9
10	Howard University School of Medicine	2	1	3	4	....	5	3	28	5	8	....	8	2	2	1	4	5	....	12	2	10
11	Emory University School of Medicine	26	....	....	1	....	....	....	....	25	109	....	....	....	....	....	2	1	....	....	....	11
12	University of Georgia Medical Department	....	....	....	....	....	....	....	....	....	117	....	....	....	....	....	....	1	....	....	....	12
13	Chicago Medical School	....	....	....	1	1	....	....	2	1	1	....	111	2	1	....	....	....	....	2	....	13
14	Loyola University School of Medicine	1	....	....	5	2	3	....	....	1	....	....	215	8	14	4	....	2	1	....	1	14
15	Northwestern University Medical School	2	4	1	16	5	....	....	1	....	1	5	143	20	23	10	3	....	1	....	1	15
16	Rush Medical College (University of Chicago)	8	....	3	9	....	2	....	1	3	1	3	230	27	31	16	6	....	2	1	2	16
17	University of Illinois College of Medicine	4	3	....	5	1	....	....	....	3	1	1	413	5	4	4	....	....	....	....	....	17
18	Indiana University School of Medicine	....	....	1	4	....	....	....	....	....	....	....	5	339	....	....	5	....	....	....	....	18
19	State University of Iowa College of Medicine	....	....	....	1	1	....	....	....	....	....	....	4	....	362	....	....	....	....	....	....	19
20	University of Kansas School of Medicine	1	....	....	....	1	....	....	....	....	....	....	1	....	....	139	....	....	....	....	....	20
21	University of Louisville School of Medicine	5	....	1	4	....	2	....	....	2	1	4	6	18	....	4	122	....	....	....	....	21
22	Tulane University of Louisiana School of Medicine	48	4	11	7	....	1	....	....	29	9	....	3	....	....	1	4	138	....	1	1	22
23	Johns Hopkins University School of Medicine	10	....	2	2	4	6	....	7	5	6	1	9	2	2	....	3	2	....	48	9	23
24	Univ. of Maryland School of Med. & Coll. of P. & S.	3	....	....	1	....	10	2	....	2	....	....	....	....	....	....	1	....	1	128	2	24
25	Boston University School of Medicine	....	....	....	....	....	13	....	....	....	....	....	1	1	....	....	....	....	13	....	83	25
26	College of Physicians and Surgeons, Boston †	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	28	26
27	Harvard University Medical School	5	2	1	25	5	20	....	1	1	9	....	17	7	8	4	4	....	11	2	132	27
28	Tufts College Medical School	1	....	....	....	....	35	....	....	....	....	....	....	....	....	....	....	....	11	....	324	28
29	Middlesex College of Medicine and Surgery.—E ‡	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	89	29
30	University of Michigan Medical School	1	....	....	5	2	....	....	1	1	1	....	5	17	4	....	5	....	....	2	3	30
31	Detroit College of Medicine and Surgery	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	31
32	University of Minnesota Medical School	....	....	....	....	....	1	....	....	....	....	....	2	....	4	1	....	....	....	....	....	32
33	University of Mississippi School of Medicine	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	3	....	....	....	33
34	University of Missouri School of Medicine	1	....	....	....	....	....	....	....	....	....	....	4	....	1	....	....	....	....	....	....	34
35	*Kansas City University of Physicians and Surgs.—N.†*	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	35
36	St. Louis College of Physicians and Surgeons ‡	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	36
37	St. Louis University School of Medicine	1	2	1	40	1	3	....	1	3	....	1	60	6	17	15	....	5	....	1	5	37
38	Washington University School of Medicine	2	....	11	14	5	1	....	2	....	2	1	49	5	3	17	2	....	....	....	....	38
39	Creighton University School of Medicine	....	1	....	5	5	1	....	....	....	....	2	5	1	26	5	....	....	....	....	1	39
40	University of Nebraska College of Medicine	....	....	1	2	7	....	....	....	....	....	....	....	....	12	8	....	....	....	....	....	40
41	Dartmouth Medical School	....	....	....	....	....	....	....	1	2	....	....	1	....	1	....	....	....	....	1	6	41
42	Albany Medical College	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	1	....	2	42
43	University of Buffalo Medical Department	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	43
44	Columbia University College of Physicians and Surgs.	2	2	....	1	4	8	....	1	1	1	....	....	2	1	1	....	....	1	1	10	44
45	Cornell University Medical College	1	....	....	7	....	3	....	1	1	....	....	....	2	....	1	2	....	1	2	6	45
46	Long Island College Hospital	....	....	....	....	....	6	....	....	....	....	....	....	1	....	....	....	....	3	....	....	46
47	New York Homeo. Med. Coll. and Flower Hosp.—H.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	47
48	University and Bellevue Hospital Medical College	....	....	1	1	1	4	....	....	2	....	1	....	....	1	....	....	....	....	1	3	48
49	University of Rochester School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	49
50	Syracuse University College of Medicine	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	50
51	University of North Carolina School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	51
52	Wake Forest College School of Medicine	1	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	52
53	University of North Dakota School of Medicine	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	53
54	Eclectic Medical College, Cincinnati.—E	....	1	....	1	....	1	....	....	....	....	....	4	10	1	2	17	....	....	....	....	54
55	University of Cincinnati College of Medicine	....	1	....	4	....	1	....	....	1	....	....	1	8	2	1	32	....	1	....	....	55
56	Western Reserve University School of Medicine	....	....	....	....	....	....	....	....	....	....	1	2	2	....	1	1	....	....	1	....	56
57	Ohio State University College of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	57
58	University of Oklahoma School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	58
59	University of Oregon Medical School	....	....	....	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	59
60	Hahnemann Med. Coll. and Hosp. of Philadelphia.—H.	....	....	....	1	....	1	8	1	....	....	....	1	2	1	....	3	....	....	1	2	60
61	Jefferson Medical College of Philadelphia	4	....	2	7	1	14	5	2	4	4	2	3	3	3	4	....	....	2	9	5	61
62	Temple University School of Medicine	1	....	....	1	....	3	2	1	1	....	....	....	....	....	....	....	....	....	1	1	62
63	University of Pennsylvania School of Medicine	7	....	....	4	2	2	5	2	2	3	1	3	....	3	2	2	1	2	3	3	63
64	Woman's Medical College of Pennsylvania	....	....	....	4	....	1	1	....	....	1	....	1	....	2	....	....	....	....	2	1	64
65	University of Pittsburgh School of Medicine	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	65
66	Medical College of the State of South Carolina	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	66
67	University of South Dakota College of Medicine	....	....	....	....	....	....	....	....	....	....	....	1	....	4	....	....	....	....	....	1	67
68	University of Tennessee College of Medicine	13	....	13	....	1	....	....	....	2	2	....	1	1	....	2	8	5	....	1	....	68
69	Meharry Medical College	14	....	4	1	1	1	....	8	13	15	....	5	1	....	3	2	5	....	2	4	69
70	Vanderbilt University School of Medicine	21	....	2	1	....	2	....	....	5	3	....	1	1	....	2	24	2	....	....	....	70
71	Baylor University College of Medicine	3	....	1	3	1	....	....	....	....	....	....	1	....	1	1	....	4	....	1	....	71
72	University of Texas School of Medicine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	72
73	University of Utah School of Medicine	....	....	....	1	1	....	....	....	....	....	2	....	....	....	....	....	....	....	1	....	73
74	University of Vermont College of Medicine	....	....	....	2	....	5	....	....	....	....	....	....	....	....	....	....	....	3	....	11	74
75	Medical College of Virginia	....	....	....	....	....	3	....	....	2	....	....	1	....	....	....	5	....	....	5	....	75
76	University of Virginia Department of Medicine	5	....	....	....	....	2	1	2	1	2	....	....	....	....	....	2	1	....	1	1	76
77	West Virginia University School of Medicine	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1	1	77
78	University of Wisconsin Medical School	....	....	....	4	....	....	....	....	....	....	....	8	1	1	2	1	....	....	....	....	78
79	Marquette University School of Medicine	1	....	....	....	....	....	....	....	....	....	....	6	1	12	1	....	....	....	....	....	79
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
† Figures and distribution are approximate.
‡ Figures exact; distribution approximate.

Marginal Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51		Marginal Number
	Michigan……654	Minnesota……494	Mississippi……161	Missouri……501	Montana……49	Nebraska……333	Nevada……12	New Hampshire…57	New Jersey……570	New Mexico……9	New York……2,570	North Carolina…315	North Dakota……65	Ohio……1,070	Oklahoma……217	Oregon……210	Pennsylvania…1,457	Rhode Island……101	South Carolina…232	South Dakota……105	Tennessee……280	Texas……686	Utah……111	Vermont……70	Virginia……476	Washington……129	West Virginia……231	Wisconsin……512	Wyoming……13	Philippines, etc…131	Foreign……379	Totals……18,810	
1	1		3						1	1	4			3							1	1			2		1				1	107	1
2	1			5		1			1		25			1	4						2	1						2		1		156	2
3	10	10		3	1	8	1	1	4		5		3	4	3	8	6		1	4	7	6		3	2	14		3		5	31	258	3
4							3			1						1	1					2				2				2	3	159	4
5								1								1														1		207	5
6				1							2	2		2			1			1	1	2							2		1	169	6
7	1			1				1	8	1	29	2		3	1		10	2				1	2	1		2	1	3		1	4	198	7
8	2				2				12		65			6			42	21		1		1	1		4		2			3	4	276	8
9		2	1	2				1	21		83	3		4	1		16		1	1	1		4		11	1	4		1	7	1	209	9
10	4		3	3					13		24	9		2	1		7	1	4			8			24		7	1			21	227	10
11						1				1		12							9		1				2		3			1	3	197	11
12				1					2		2	1							7												4	135	12
13	3	1							2		4			1	1					1	1	1			1			1		4	4	147	13
14	26	6		3	1	1			2		19			9	1	1	11			4		4	2			1	1	5		10	5	309	14
15	14	19	4	11	4	9			1		8		7	10	7	4	6		1	12		3	3		1	14	2	22	1	6	10	415	15
16	17	11	1	11	4	6	1		1	1	7	2	10	18	6	4	7			7	3	8	6	1	1	6	2	23		10	4	538	16
17	3	4		4					1		3	1	1	2			1			2	1	1	3				2	12		2	6	493	17
18	5	1							1		1			7	1		2					1			1			2			1	377	18
19	1	11		2		1			1		6				2					2		1								3	4	402	19
20				25	1						2			2								1					1			1	4	179	20
21	2	6		4		1			3		11	3	1	24	5		3			1	1	5	2			1	13	1		1	3	200	21
22	2		28	2		1			5		29	16	1		3		1		4		7	52							1	5	3	408	22
23	3	1	2	4	1			1	8		35	6		11		2	20	1	7		4	11	2	1	16	2	4	9			3	272	23
24									42		84	15		5			35	4	5			1	3	1	4		17			2	3	371	24
25	3							5	8		50					1	2	6					1			1	1			4	7	200	25
26																																23	26
27	2	3		6		7	3	7	15		59	4		18	2	10	21	15	3	2	5	7	5	6	9	6	4	15	1	1	14	507	27
28		1						17	7		50			1			3	25						1		1				1	4	482	28
29									5		4			1			9														1	109	29
30	312	4		3	4				10	1	28	1	1	47	2		21	1		2		2	1	1	1	5	2	2		1	12	541	30
31	189													5			1														2	199	31
32	4	339	1		3						1		6	1			1			4			3			4		8		2	4	389	32
33			55	1							1										2	1										64	33
34				64							1				4							1							1	1		78	34
35				37																												37	35
36				50																												50	36
37	7	10	1	157	9		1		6		33			68	1	2	9	4	1			7	1			6	2	8		5	2	502	37
38		5	3	126	1		1				2	6	2	2	8	3	1		1	2	2	5	5			11		5		2	2	309	38
39		14		6	8	73					4			2	1	4	1			19			2			6		1	1			194	39
40		4		2	1	215					1		1	1	1	1	1			8		1							4	2	1	274	40
41						1		3	2		5	1		1			7							1		1					1	35	41
42									3		84						1															93	42
43	1			2					1		231			4			5									3		1			5	255	43
44	1	1	3					4	61		248	1		1		1	6	3	2		4	1	7	2	1	2		5		3	8	401	44
45							1	1	33		181	2		8		1	4	6			2				2	1		1		1	3	274	45
46	1					1			21		353						2					1		1						1		394	46
47									11		202						1															214	47
48		1		1				1	34		225	1					6		1		1	1	2		1		4				114	403	48
49											17			1			1														1	22	49
50									12		141			2			2	2					2	1						4	5	173	50
51												74					1		3						1						1	80	51
52												33							2						2							40	52
53		8			1						5		29				1											1		5		51	53
54	3	1	1	2		1			6		22	1		52			11			1	1	1					3	1				144	54
55	4	1	1	3					1		3	7		157	1		12				2		2		2		5	1		1	3	258	55
56	3			1		1					5			170			21					1			2		5	1		1	1	220	56
57												1		312			2										1			1		320	57
58									1	1	1				154		1					2								3		165	58
59					1		1									194							1			21				1		224	59
60	3			1		1			48		5			8			141					1			2		1	1		1	7	244	60
61	1	4	2	6		2		1	40		23	33		29		1	292	7	5	2	2	9	5		2	1	15	1		9	13	579	61
62				1				1	24		6	1	1	6			167		1							1	1				3	224	62
63	3	3	5	3	1	2		2	27		22	37		9	1		232	2	6		7	9	9		6	13	3	13	1	1	9	473	63
64	2	3							9		18	2		4			35		1		1				2	1		1		2	6	100	64
65									1					7			218								1							229	65
66									2		1	6							145												1	156	66
67		1							1		2									25						1						36	67
68			18	1					4	1	5	3		1	2		1				129	14	1		1		1					231	68
69	5	1	10	2							16	15		11			13		13		11	14			20		1				14	225	69
70			4	2					2	1	4			1	2		1		4		71	21			5						4	185	70
71		1							2		8			1	2							246						1			1	278	71
72																						224										224	72
73					1											1							39							1		47	73
74	1							8	4		14													56								104	74
75									5		14	34		5			7	1	1		3	1			210		39			6		312	75
76	1		15					1	7		23	8					4		4		7	3			136		8			1	5	241	76
77								1	2		2			12			17								1		75			4		117	77
78	4	1			1				2					3						2		2						185			2	219	78
79	9	16		2	4						7	2	2	5						2						1		191		1		263	79
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51		

(Continued from page 565)

GRADUATES HOLDING DEGREES IN ARTS

Of the 3,962 medical graduates, 2,388 (table 6) also obtained degrees in arts or science. This was 43 less than last year. This year 60.3 per cent of all graduates held collegiate degrees as compared with only 15.3 per cent of the graduates in 1910. Of the 3,801 nonsectarian school graduates, 2,365, or 62.2 per cent, were reported to have baccalaureate degrees; of the 80 homeopathic graduates, 16, or 20.0 per cent, and of the 64 eclectic graduates, 7 or 10.9 per cent. As noted in table 10, of the 2,388 graduates holding baccalaureate degrees, 345—the largest number—came from the Illinois medical colleges. New York reported 252, Pennsylvania reported 223, Massachusetts reported 154, and Ohio reported 133. All the better medical schools are now requiring two or more years of college work for admission, which brings more students in reach of the combined course for the B.S. and M.D. degrees.

TABLE 3.—*Medical Students Shown by Classes*

NAME OF COLLEGE	Enrolled During 1925-26				
	1st Year	2d Year	3d Year	4th Year	Totals
University of Alabama School of Medicine*	57	50	..	..	107
University of Arkansas Medical Department	57	31	43	25	156
College of Medical Evangelists	93	85	36	44	258
Stanford University School of Medicine	45	50	36	28	159
University of California Medical School	58	44	50	55	207
University of Colorado School of Medicine	60	40	32	37	169
Yale University Sch[illegible]	57	48	43	50	198
Georgetown Universi[illegible]	96	90	47	43	276
George Washington [illegible]	87	59	74	49	269
Howard University [illegible]	61	53	53	60	227
Emory University S[illegible]	55	42	43	57	197
University of Georgia Medical Department	36	43	30	26	135
Chicago Medical School	33	34	34	46	147
Loyola University School of Medicine	140	94	80	55	369
Northwestern University Medical School	111	84	111	109	415
Rush Medical College (Univ. of Chicago)	95	108	153	182	538
University of Illinois College of Medicine	131	125	109	128	493
Indiana University School of Medicine	113	97	87	80	377
State University of Iowa College of Med	130	117	80	75	402
University of Kansas School of Medicine	68	37	34	40	179
University of Louisville School of Medicine	73	61	67	59	260
Tulane Univ. of Louisiana School of Med	126	90	105	87	408
Johns Hopkins University School of Med	60	71	73	68	272
Univ. of Md. Sch. of Med. & Coll. P. & S.	122	92	86	71	371
Boston University School of Medicine	59	44	48	49	200
College of Physicians & Surgeons, Boston†	5	6	8	9	28
Harvard University Medical School	125	116	135	131	507
Tufts College Medical School	140	118	114	110	482
Middlesex College of Medicine and Surg.—E.	29	19	29	32	109
University of Michigan Medical School	183	124	119	115	541
Detroit College of Medicine and Surgery	63	56	40	40	199
University of Minnesota Medical School	111	111	105	62	389
University of Mississippi School of Med.*	35	29	...	..	64
University of Missouri School of Medicine*	42	36	...	..	78
Kansas City Univ. of Phys. and Surgs.—N.†	5	6	9	17	37
St. Louis College of Physicians and Surgs.‡	6	12	16	16	50
St. Louis University School of Medicine	161	108	115	118	502
Washington University School of Medicine	84	70	78	77	309
Creighton University School of Medicine	60	46	49	39	194
University of Nebraska College of Medicine	85	69	50	70	274
Dartmouth Medical School*	18	17	..	..	35
Albany Medical College	34	26	17	16	93
University of Buffalo Medical Department	77	64	66	48	255
Columbia Univ. College of Phys. & Surgs.	113	95	98	95	401
Cornell University Medical College	83	68	59	64	274
Long Island College Hospital	121	105	77	91	394
N. Y. Homeo. M. Coll. & Flower Hosp.—H.	74	65	34	41	214
University and Bellevue Hosp. Med. College	120	91	107	90	408
University of Rochester School of Medicine	22	..	..	..	22
Syracuse University College of Medicine	49	42	42	40	173
Univ. of North Carolina School of Med.*	42	38	..	..	80
Wake Forest College School of Medicine*	22	18	..	..	40
Univ. of North Dakota School of Medicine*	27	24	..	..	51
Eclectic Medical College, Cincinnati.—E.	36	36	34	38	144
University of Cincinnati College of Medicine	70	65	68	55	258
Western Reserve University School of Med.	73	61	39	47	220
Ohio State University College of Medicine	101	80	60	79	320
University of Oklahoma School of Medicine	35	43	47	40	165
University of Oregon Medical School	71	59	44	50	224
Hahnemann Medical College and Hospital of Philadelphia.—H.	80	64	61	39	244
Jefferson Medical College of Philadelphia	158	135	142	144	579
Temple University School of Medicine	61	59	47	57	224
University of Pennsylvania School of Med.	111	92	135	135	473
Woman's Medical College of Pennsylvania	32	17	21	30	100
University of Pittsburgh School of Medicine	66	60	56	47	229
Medical College of the State of S. Carolina	37	45	36	38	156
University of So. Dakota College of Med.*	18	18	..	..	36
University of Tennessee College of Medicine	78	56	48	49	231
Meharry Medical College	67	57	55	46	225
Vanderbilt University School of Medicine	49	41	43	52	185
Baylor University College of Medicine	111	75	52	40	278
University of Texas School of Medicine	66	43	46	69	224
University of Utah School of Medicine*	26	21	..	..	47
University of Vermont College of Medicine	29	32	17	26	104
Medical College of Virginia	93	79	89	81	342
University of Virginia Department of Med.	82	62	52	45	241
West Virginia University School of Med.*	61	56	..	..	117
University of Wisconsin Medical School	108	85	26	..	219
Marquette University School of Medicine	75	70	62	56	263
Totals for 1926	5,753	4,779	4,201	4,107	18,840
Totals for 1925	5,492	4,415	4,136	4,157	18,200
Totals for 1924	5,160	4,441	4,330	3,797	17,728

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
* Gives only the first two years of the medical course.
† Figures and distribution are approximate.
‡ Figures exact; distribution approximate.

TABLE 5.—*Medical College Graduates*

Year	Non-sectarian	Homeo-pathic	Eclectic	Physio-Med.	Nonde-script	Total
1880	2,673	380	188	..	..	3,241
1890	3,853	380	221	..	..	4,454
1900	4,715	413	86	..	..	5,214
1904	5,190	371	146	20	20	5,747
1910	4,113	183	114	16	14	4,440
1915	3,286	195	55	..	..	3,536
1920	2,826	97	30	..	94	3,047
1921	2,969	115	30	..	78	3,192
1922	2,358	64	34	..	73	2,529
1923	2,984	49	16	..	71	3,120
1924	3,395	74	27	..	66	3,562
1925	3,856	80	38	..	..	3,974
1926	3,801	80	64	..	17	3,962

WOMEN IN MEDICINE

During the last year there were 935 women studying medicine, or 25 more than last year. The percentage of women to all medical students this year is 4.4. There were 212 women graduates this year, 8 more than last year. Of all the women matriculants, 100 were in attendance at and 29 graduated from the one medical college for women, while 835 (89.6 per cent) were matriculated in, and 183 (86.2 per cent) graduated from the coeducational colleges.

TABLE 6.—*Medical Graduates with Liberal Arts Degrees*

	Nonsectarian			Homeopathic			Eclectic			Totals		
Year	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.
1910	4,113	664	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1915	3,286	839	25.5	195	16	8.2	55	3	5.5	3,536	858	24.3
1920	2,826	1,307	46.2	97	11	11.3	30	3	10.0	3,043	1,321	43.5
1921	2,969	1,447	48.2	115	33	28.7	30	...	...	3,192	1,465	46.0
1922	2,358	1,440	61.1	64	13	20.3	34	2	5.9	2,529	1,455	57.5
1923	2,984	1,770	59.3	49	13	26.5	16	3	18.7	3,120	1,787	57.3
1924	3,395	1,991	58.6	74	27	36.5	27	2	7.4	3,562	2,020	56.7
1925	3,856	2,408	62.4	80	21	26.2	38	2	5.3	3,974	2,431	61.2
1926	3,801	2,365	62.2	80	16	20.0	64	7	10.9	3,962	2,388	60.3

Note.—The one remaining nondescript college had but seventeen graduates, none of which held a collegiate degree.

NUMBER OF COLLEGES

The number of medical colleges existing in certain years since 1850 are shown in table 7. The number has decreased from 162 in 1906 to 79—the lowest number—in 1924. Last year, with the opening of the new medical school of the University of Rochester, N. Y., the number 80 was restored. This year the number again drops to 79 with the closing of the Kansas City College of Medicine and Surgery, through the revocation of its charter.

Of the 79 colleges, 74 are nonsectarian (regular), 2 are homeopathic, 2 are eclectic, and 1 is nondescript. One of the colleges, the Kansas City University of Physicians and Surgeons, is intimately related to osteopathy or gives liberal advanced standing to students of osteopathic colleges. The Middlesex College of Medicine and Surgery, which declares itself an eclectic college, is also, apparently, affiliated with osteopathy. The Kansas City College of Medicine and Surgery and the St. Louis College of Physicians and Surgeons were involved in the Missouri diploma-mill scandal in the fall of 1923. The charter of the former has just been revoked, and it is expected that the same action will be taken regarding the latter.[2]

TABLE 7.—*Medical Colleges*

Year	Non-sectarian	Homeo-pathic	Eclectic	Physio-Med.	Nonde-script	Total
1850	44	3	4	1	..	52
1860	53	6	4	2	..	65
1870	60	8	5	2	..	75
1880	76	14	8	2	..	100
1890	106	16	9	2	..	133
1900	126	22	9	2	1	160
1906	130	19	8	3	2	162
1910	109	12	8	1	1	131
1915	83	9	4	..	..	96
1920	76	5	1	..	3	85
1921	74	5	1	..	3	83
1922	74	3	1	..	3	81
1923	74	2	1	..	3	80
1924	73	2	1	..	3	79
1925	74	2	1	..	3	80
1926	74	2	2	..	1	79

The colleges named above, together with the Chicago Medical School and the College of Physicians and Surgeons of Boston, because of their serious low grade, could not be rated higher than class C by the Council on Medical Education and Hospitals. They are also officially reported as being not recognized by the licensing boards of about forty-six states. It matters little, therefore, whether diplomas issued by them are earned by actual attendance or whether they are purchased outright. Their holders are ineligible for licenses in all but a few states—notably Arkansas, and two other states.

TABLE 8.—*College Terms*

	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
Year	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	23.8	3	1.9
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1915	..	...	1	1.0	5	5.3	22	23.2	36	37.9	30	31.6	1	1.0
1920	..	...	..	...	1	1.2	10	11.8	38	44.7	29	34.1	..	...
1921	..	...	..	...	..	...	11	13.1	39	46.4	28	33.3	..	...
1922	..	...	..	...	..	...	10	13.1	43	56.6	23	30.3	..	...
1923	..	...	..	...	..	...	6	7.5	48	60.0	22	25.0	..	...
1924	..	...	..	...	..	...	6	7.6	44	55.7	23	29.0	..	...
1925	..	...	..	...	..	...	6	7.6	35	43.8	33	41.2	1	1.2
1926*	..	...	..	...	..	...	6	7.6	36	45.6	32	40.5	1	1.2

* Information not furnished by four class C colleges.

LENGTH OF TERMS

During the last twenty-six years (table 8) there has been a lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Prior to 1905, the majority of colleges had sessions of twenty-eight weeks or less. For ten years, however, no college has had sessions shorter than twenty-nine weeks, and for six years the shortest session reported has been thirty-one weeks. This year sessions of from thirty-three to thirty-seven weeks were reported by sixty-eight, or 86 per cent, of all colleges. One medical school, with night classes, reported sessions of thirty-eight weeks.

TUITION AND OTHER FEES

In table 1, pages 566, 567, are given the amounts charged by the various medical colleges per annum for tuition, matriculation, laboratory and graduation fees for each student. In table 9, the seventy-nine colleges have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education and Hospitals. Eleven colleges charge fees of $150 or less a year; twenty-seven charge from $150 to $250; thirty-two from $250 to $350; six charge from $350 to $400, and three colleges in New York City this year charge between $500 and $550. The average fee per student in all colleges was $274. Of the eleven colleges charging $150 or less, ten are listed among class A (acceptable) colleges by the Council on Medical Education and Hospitals. Among these are the schools of medicine of several state universities for residents of those states. The five colleges listed by the Council in class C charge fees of $150 to $350 a year even though the diplomas from these colleges are reported as not recognized by from forty-two to forty-eight state licensing boards.[3]

TABLE 9.—*College Fees—1926*

	Class A	Class B	Class C	Per Cent.	Total
$ 50 to 100	4	..	..	5.1	4
100 to 150	6	..	1	8.9	7
150 to 200	13	..	1	17.7	14
200 to 250	10	1	2	16.4	13
250 to 300	12	1	1	17.7	14
300 to 350	18	..	..	22.8	18
350 to 450	5	1	..	7.6	6
450 to 550	3	..	..	3.8	3
Totals	71	3	5	100.0	79

Average fee per student in all colleges, $274.

COLLEGE FEES DURING SIXTEEN YEARS

As shown in table 10, tuition fees in medical schools have been gradually increased during the last sixteen years. From 1910 to 1915, the majority of medical schools were charging fees of $150 or less. From 1916 to 1922 the majority were charging fees above $150, while since 1920 the majority have included several medical schools charging more than $300. The percentage of medical schools charging more than $300 increased from 4.7 in 1920 to 34.2 in 1926. Now, twenty-seven, or 33.8 per cent, of all colleges are charging fees over $300 per student, and three, or 3.8 per cent, are charging over $500. The average fees charged per student by all colleges in 1910 was $118; in 1915 it had increased to $145; in 1920, to $177; in 1925, to $236, and in 1926, to $274.

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[2] The Kansas City College of Medicine and Surgery is to be continued, apparently, under a new charter, since an institution bearing the name "American Medical University" is sending out circular letters announcing the same address and also claiming to teach eclectic medicine.

[3] J. A. M. A. 86: 1542-1543 (May 15) 1926, table D.

In 1910 there were still several medical schools which were paying all expenses, and a few were making profits from students' fees. At present, however, the colleges are expending for the instruction of each student from two to several times as much as he pays in fees. This is made possible because of state aid or private endowment. No medical college in this period of scientific progress can maintain the laboratories and pay the essential instructors and properly teach modern medicine on the income received alone from students' fees.

Table 10.—*Increase in Medical College Fees During Sixteen Years*

Showing for each Year the Number and Percentage of Colleges Requiring

Year	$50 or Less		$50 to $100		$100 to $150		$150 to $200		$200 to $250		$250 to $300		$300 to $350		$350 to $450		$450 to $550		Total Colleges
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
1910	7	5.3	39	29.3	62	46.6	22	16.5	2	1.5	1	0.8	..	...	..	...	..	...	133
1911	2	1.7	33	27.5	54	45.0	27	22.5	4	3.3	..	...	..	...	..	...	..	...	120
1912	2	1.7	17	14.7	61	52.5	32	27.6	3	2.6	1	0.9	..	...	..	...	..	...	116
1913	3	2.8	20	18.9	43	40.6	34	32.1	5	4.7	1	0.9	..	...	..	...	..	...	106
1914	5	4.9	11	10.8	44	43.1	35	34.3	6	5.9	1	1.0	..	...	..	...	..	...	102
1915	6	6.4	10	10.6	31	33.0	38	40.5	7	7.4	2	2.1	..	...	..	...	..	...	94
1916	6	6.5	13	14.0	23	24.7	41	44.1	8	8.6	2	2.1	..	...	..	...	..	...	93
1917	5	5.3	11	11.6	29	30.5	39	41.0	7	7.4	4	4.2	..	...	..	...	..	...	95
1918	5	5.6	11	12.4	22	24.7	35	39.3	12	13.5	4	4.5	..	...	..	...	..	...	89
1919	5	5.8	9	10.6	14	16.5	35	41.2	18	21.2	4	4.7	..	...	..	...	..	...	85
1920	3	3.5	9	10.5	19	22.3	27	32.0	19	22.3	4	4.7	3	3.5	1	1.2	..	...	85
1921	3	3.6	7	8.4	15	18.2	25	30.1	18	21.7	7	8.4	7	8.4	1	1.2	..	...	83
1922	3	3.7	7	8.6	13	16.1	19	23.5	19	23.5	9	11.1	10	12.3	1	1.2	..	...	81
1923	2	2.5	7	8.7	6	7.5	22	27.5	18	22.5	11	13.8	13	16.3	1	1.2	..	...	80
1924	1	1.3	5	6.3	8	10.1	21	26.6	14	17.7	14	17.7	13	16.5	3	3.8	..	...	79
1925	..	...	6	7.5	6	7.5	20	25.0	13	16.3	13	16.2	19	23.7	3	3.8	..	...	80
1926	..	...	4	5.1	7	8.9	14	17.7	13	16.4	14	17.7	18	22.8	6	7.6	3	3.8	79

Table 11.—*Medical Colleges, Students and Graduates by States*

State	Colleges			Students		Graduates		Grads. with A.B. or B.S.
	Class A	Class B	Class C	Men	Women	Men	Women	
Alabama	1	..	..	106	1	.....	...	.....
Arkansas	1	..	..	155	1	24	...	16
California	3	..	..	545	79	66	12	64
Colorado	1	..	..	156	13	32	5	17
Connecticut	1	..	..	190	8	47	2	39
District of Columbia	3	..	..	756	16	142	2	67
Georgia	2	..	..	327	5	80	1	50
Illinois	4	..	1	1,855	107	436	21	345
Indiana	1	..	..	366	11	79	1	78
Iowa	1	..	..	389	13	71	2	52
Kansas	1	..	..	166	13	33	4	27
Kentucky	1	..	..	255	5	59	...	30
Louisiana	1	..	..	393	15	80	3	45
Maryland	2	..	..	605	38	130	7	101
Massachusetts	3	..	2	1,272	54	303	19	154
Michigan	2	..	..	701	39	153	9	60
Minnesota	1	..	..	363	26	88	8	96
Mississippi	1	..	..	63	1	.....	...	.....
Missouri	3	..	2	956	20	211	4	135
Nebraska	2	..	..	454	14	103	1	83
New Hampshire	1	..	..	35	...	.....	...	.....
New York	8	1	..	2,070	164	446	35	252
North Carolina	2	..	..	118	2	.....	...	.....
North Dakota	1	..	..	50	1	.....	...	.....
Ohio	3	1	..	901	41	205	12	133
Oklahoma	1	..	..	155	10	38	2	35
Oregon	1	..	..	215	9	47	2	30
Pennsylvania	5	1	..	1,717	132	402	41	223
South Carolina	1	..	..	149	7	35	3	16
South Dakota	1	..	..	35	1	.....	...	.....
Tennessee	3	..	..	634	7	145	1	72
Texas	2	..	..	476	26	101	7	59
Utah	1	..	..	47	...	.....	...	.....
Vermont	1	..	..	96	8	24	2	10
Virginia	2	..	..	334	8	78	3	21
West Virginia	1	..	..	115	2	.....	...	.....
Wisconsin	2	..	..	450	32	49	1	50
Totals	71	3	5	17,905	935	3,750	212	2,388
				18,840		3,962		

As the cost of conducting medical schools has increased, there has also been an increase—and properly so—in the fees charged for tuition. A large provision has been made for scholarships and loan funds (page 590) for the benefit of deserving students who are financially poor. More are needed now because students cannot spare the time to earn money during their attendance at the medical school.

COLLEGES, STUDENTS AND GRADUATES BY STATES

New York now has nine medical colleges—the largest number—(table 11) all but one of which are in class A. Pennsylvania has six colleges, and Illinois, Massachusetts and Missouri have five each. Of class C colleges, however, Missouri and Massachusetts have two each, and Illinois, one. These class C colleges exist because the licensing boards in certain states do not have or do not exert the power to refuse to examine their graduates.

New York had the largest number of students enrolled, 2,234, followed by Illinois with 1,962, Pennsylvania with 1,849, and Massachusetts with 1,326. New York leads also in the number of graduates, having reported 481, followed by Illinois with 457, Pennsylvania with 443, Massachusetts with 322, and Ohio with 217.

COEDUCATION IN MEDICAL SCHOOLS

In recent years medical schools in increasing numbers have opened their classes to women, so that at present only eight medical schools in the United States and two in Canada are limited to men students. The Woman's Medical College of Pennsylvania is the only medical school that is entirely for women. Table 12 shows for each medical school the dates when it was organized and when it became coeducational. Prior to 1900, only thirty-two of the medical schools were coeducational. Thirteen others became coeducational between 1900 and 1910. Twenty-four made the change between 1910 and 1920, while four others began to admit women during the last six years.

QUALIFICATIONS OF STUDENTS AND GRADUATES

Table 13 shows, for each year specified, the students and graduates grouped according to their classification by the Council on Medical Education and Hospitals. During the last thirteen years the number of students enrolled in class A colleges has increased from 11,122 to 17,887. Both the numbers and the percentages of students enrolled in class B and class C colleges have decreased. The percentage of students in class B colleges dropped from 24.4 to 3.0, and in class C colleges from 10.2 to 2.0. Of graduates, also, the percentage in class A colleges has increased, while it has decreased in class B and class C colleges. Such reductions as there have been in the total numbers of students and graduates, therefore, have been at the expense of the lower grade colleges.

Table 12.—*Coeducation in Medical Schools*

Name of College	Date of Organization	Year Co-Education Began
University of Alabama School of Medicine	1859	1920
University of Arkansas Medical Department	1879	1879
College of Medical Evangelists	1909	1909
Stanford University School of Medicine	1908	1908
University of California Medical School	1863	1863
University of Colorado School of Medicine	1883	1883
Yale University School of Medicine	1810	1916
Georgetown University School of Medicine	1851	....
George Washington University Medical School	1825	1884
Howard University School of Medicine	1869	1869
Emory University School of Medicine	1854	....
University of Georgia Medical Department	1828	1920
Chicago Medical School	1911	1919
Loyola University School of Medicine	1868	1900
Northwestern University Medical School	1859	1926
Rush Medical College	1843	1898
University of Illinois College of Medicine	1882	1898
Indiana University School of Medicine	1903	1903
State University of Iowa College of Medicine	1869	1870
University of Kansas School of Medicine	1880	1880
University of Louisville School of Medicine	1837	1837
Tulane University of Louisiana School of Medicine	1834	1915
Johns Hopkins University School of Medicine	1893	1893
Univ. of Maryland Sch. of Med. & Coll. of P. & S.	1807	1918
Boston University School of Medicine	1873	1873
Harvard University Medical School	1782	....
Tufts College Medical School	1893	1894
Detroit College of Medicine and Surgery	1885	1917
University of Michigan Medical School	1850	1850
University of Minnesota Medical School	1883	1883
University of Mississippi School of Medicine	1903	1903
St. Louis University School of Medicine	1901	....
University of Missouri School of Medicine	1845	1872
Washington University School of Medicine	1842	1918
Creighton University School of Medicine	1892	1892
University of Nebraska College of Medicine	1881	1882
Dartmouth Medical School	1797	....
Albany Medical College	1838	1915
Columbia University College of Phys. and Surgs.	1807	1917
Cornell University Medical College	1898	1898
Long Island College Hospital	1858	1918
New York Homeo. Med. Coll. & Flower Hospital	1858	1919
Syracuse University College of Medicine	1872	1872
University and Bellevue Hospital Medical College	1898	1919
University of Buffalo Medical Department	1846	1846
University of Rochester School of Medicine	1925	1925
University of North Carolina School of Medicine	1890	1914
Wake Forest College School of Medicine	1902	....
University of North Dakota School of Medicine	1905	1905
Eclectic Medical College	1833	1871
Ohio State University College of Medicine	1907	1907
University of Cincinnati College of Medicine	1909	1909
Western Reserve University School of Medicine	1843	1919
University of Oklahoma School of Medicine	1900	1900
University of Oregon Medical School	1887	1887
Hahnemann Med. Coll. and Hosp. of Philadelphia	1848	....
Jefferson Medical College	1825	....
Temple University School of Medicine	1901	1901
University of Pennsylvania School of Medicine	1765	1916
University of Pittsburgh School of Medicine	1886	1899
Woman's Medical College of Pennsylvania	1850	....
Medical College of the State of South Carolina	1823	1895*
University of South Dakota College of Medicine	1907	1907
Meharry Medical College	1876	1876
University of Tennessee College of Medicine	1876	1911
Vanderbilt University School of Medicine	1874	1925
Baylor University College of Medicine	1900	1900
University of Texas School of Medicine	1891	1891
University of Utah School of Medicine	1906	1906
University of Vermont College of Medicine	1822	1920
Medical College of Virginia	1838	1918
University of Virginia Department of Medicine	1827	1920
West Virginia University School of Medicine	1902	1902
Marquette University School of Medicine	1912	1912
University of Wisconsin Medical School	1907	1907
Dalhousie University Faculty of Medicine	1867	1871
Laval University Faculty of Medicine	1848	....
McGill University Faculty of Medicine	1824	1919
Queen's University Faculty of Medicine	1854	....
University of Alberta Faculty of Medicine	1913	1913
University of Manitoba Faculty of Medicine	1883	1883
University of Montreal Faculty of Medicine	1843	1925
University of Toronto Faculty of Medicine	1843	1903
University of Western Ontario Medical School	1881	1913

* Co-educational 1895; privilege for women withdrawn 1912; restored 1917.

GRADUATE MEDICAL EDUCATION

The facilities for graduate medical instruction in the United States are set forth in pages 585-589. A list of graduate medical schools that have been approved by the Council on Medical Education and Hospitals is published alphabetically. There is also a series of sixty subjects under each of which is given a list of the institutions in which approved courses of instruction are being given. Other subjects will be added from time to time. Other institutions are rapidly being added to the list. There are now on the approved list forty-one graduate medical schools of the United States and seventeen of foreign countries. There are also fifty hospitals of the United States in which approved residencies in certain specialties can be obtained.

Table 13.—*Students and Graduates According to Classification*

	Students						Graduates					
	Colleges Rated in Class						Colleges Rated in Class					
Year	A	%	B	%	C	%	A	%	B	%	C	%
1913	11,122	65.4	4,158	24.4	1,735	10.2	2,539	63.8	1,050	26.4	392	9.8
1915	11,314	76.0	2,668	17.9	909	6.1	2,629	74.4	685	19.4	219	6.2
1920	12,920	89.2	690	4.8	798	6.0	2,699	88.4	152	5.0	205	6.6
1925	17,497	96.2	554	3.0	149	0.8	3,852	96.2	118	3.0	4	0.8
1926	17,887	95.0	582	3.0	371	2.0	3,732	91.2	139	3.3	100	2.5

NEGRO MEDICAL STUDENTS AND GRADUATES

Owing to the special interest that has been shown recently in regard to the numbers of negro medical students and graduates enrolled in the various medical schools, the tabulation published herein has been made of those reported as having been enrolled in medical schools during the session of 1925-1926. In the session of 1923-1924, 471 negro students were enrolled, of whom eighty-five were graduated; during 1924-1925, 543 negro students were enrolled (including twenty in the McGill University Faculty of Medicine), of whom 126 were graduated, and during 1925-1926, 574 negro students were enrolled, of whom 122 were graduated.

Table 14.—*Negro Medical Students*

Name of College	Session of 1925-26	
	Students	Graduates
College of Medical Evangelists	1	..
University of California Medical School	1	..
Howard University School of Medicine	226	54
Northwestern University Medical School	10	3
Rush Medical College	14	2
Chicago Medical School	24	3
Loyola University School of Medicine	15	..
Indiana University School of Medicine	5	1
University of Kansas School of Medicine	1	..
Boston University School of Medicine	1	..
Harvard University Medical School	7	2
Tufts College Medical School	4	..
University of Michigan Medical School	3	2
University of Nebraska College of Medicine	1	..
Columbia University College of Phys. & Surgs.	1	..
Long Island College Hospital	1	..
Western Reserve University School of Medicine	1	..
Ohio State University College of Medicine	4	..
Temple University School of Medicine	2	1
Woman's Medical College of Philadelphia	1	..
Meharry Medical College	225	47
Dalhousie University Faculty of Medicine	4	4
McGill University Faculty of Medicine	16	3
University of Toronto Faculty of Medicine	6	..
Totals for 1926	574	122
Totals for 1925	543	126
Totals for 1924	471	85

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, of which ten do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination. In a few instances in which such reports were not received, the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1925. Extract of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimate for 1925. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of college work. Twelve states, Alaska (Ter.), Delaware, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Dakota, Utah and Washington, require also a year's hospital internship as an essential qualification for a license.

ALABAMA

Alabama, population 2,467,190, has one medical college, the School of Medicine of the University of Alabama, located in Tuscaloosa, a city with a population of 13,083.

In order to secure licenses to practice medicine in Alabama, students must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Tuscaloosa

University of Alabama School of Medicine, University Campus, Tuscaloosa.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920, clinical teaching was suspended and the medical school was removed to the university campus at Tuscaloosa. Since 1920 men and women students have been admitted on equal basis. The faculty includes 7 professors and 7 instructors, assistants, etc., a total of 14. The course of study covers two years of thirty-six weeks each. The tuition fee each year is $222. The Dean is Dr. Clyde Brooks. Total registration for 1925-1926 was 107. The sixty-first session begins Sept. 13, 1926, and ends May 31, 1927.

ARKANSAS

Arkansas, population 1,852,905, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 74,216.

To secure licenses to practice medicine in Arkansas, students must complete two years of collegiate work, including college courses in physics, chemistry, biology and a modern language, before beginning the study of medicine.

Little Rock

University of Arkansas Medical Department, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Co-educational since date of organization. The faculty consists of 24 professors and 34 lecturers and assistants, total 58. The curriculum embraces four years of thirty-four weeks each. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The fees for the four years, respectively, for residents of Arkansas are $85, $90, $75 and $100; nonresidents are charged $100 additional each year. The Dean is Dr. Morgan Smith. The total registration for 1925-1926 was 156; graduates, 24. The forty-eighth session begins Sept. 16, 1926, and ends June 2, 1927.

CALIFORNIA

California, population 4,021,320, has three medical colleges. Two are located in San Francisco, a city of 557,530 inhabitants. They are Stanford University School of Medicine and the College of Medicine of the University of California. The College of Medical Evangelists is located at Loma Linda and Los Angeles, the latter city having a population of 576,673.

To secure a license to practice medicine in California under the "physician's and surgeon's" certificate, students must complete at least a year of work of college grade including courses in physics, chemistry and biology before beginning the second half of the second year in the study of medicine.

Berkeley-San Francisco

University of California Medical School, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica and therapeutics were provided. Co-educational since organization. Three years of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 66 professors and 170 associates and assistants, a total of 236. The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are $290, $248, $235 and $225; nonresidents are charged $300 additional each year. The Dean is Dr. L. S. Schmitt. Total registration for 1925-1926 was 207; graduates, 48. The fifty-fourth session begins Aug. 13, 1926, and ends May 11, 1927.

Loma Linda-Los Angeles

College of Medical Evangelists.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles on property bounded by Boyle, Michigan, Bailey and New Jersey streets. Co-educational since 1909 the date of organization. The faculty is composed of 50 professors and 113 associates, assistants and instructors, a total of 163. The course extends over five years of nine months each—the fifth year consisting of an internship in a hospital, or of special work in a department of the Medical School. The work of the first two years is given at Loma Linda and the third and fourth years at Los Angeles. Two years of college work are required for admission. The total fees for the four years, respectively, are $236, $233, $316 and $286. The President is Dr. Newton Evans, Loma Linda, Calif., and the Dean of the Clinical Division is Dr. P. T. Magan, Los Angeles. The total registration for 1925-1926 was 258; graduates, 3. The eighteenth session begins Sept. 6, 1926, and ends May 29, 1927.

San Francisco-Stanford University

Stanford University School of Medicine, Campus, Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. Co-educational since organization. The faculty consists of 75 professors and 98 lecturers, assistants, etc., a total of 173. Three years of collegiate work are required for admission. The course covers four years of nine months each, plus a fifth year of practice or intern work. The total fees for each of the first four years are $261. The Dean is Dr. William Ophüls, San Francisco. The total registration for 1925-1926 was 159; graduates, 27. The seventeenth session begins Oct. 1, 1926, and ends June 15, 1927.

COLORADO

Colorado, with a population of 1,019,286, has one medical college, the University of Colorado School of Medicine. It is located in Denver, which has a population of 280,911.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or nongraduate, to try the board's written examination.

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine were merged Jan. 1, 1911. Co-educational since organization. The faculty embraces 42 professors and 31 lecturers, instructors and assistants, a total of 73. The work embraces a graded course of four years of nine months each and a year's internship in a hospital. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The fees for residents of Colorado, for each of the four years are, respectively, $206, $221, $195 and $185. Nonresidents pay $105 more each year. The Dean is Dr. Maurice H. Rees. The total registration for 1925-1926 was 169; graduates, 37. The forty-fifth session begins Sept. 27, 1926, and ends June 10, 1927.

CONNECTICUT

Connecticut, with a population of 1,531,255, has one medical college, Yale University School of Medicine, located in New Haven, population 178,927.

Students who desire to practice medicine in Connecticut will not be eligible unless, prior to entering the study of medicine, they complete, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

Yale University School of Medicine, 150 York Street and at corner Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Co-educational since 1916. The faculty consists of 62 professors and 95 lecturers and assistants, a total of 157. The requirements for admission are three years of collegiate work plus evidence of satisfactory completion of courses in general physics, general inorganic chemistry, qualitative analysis, general biology, organic chemistry and physical chemistry or laboratory physics, all reasonably equivalent to the courses in these subjects in Yale University. The student also must have two years of French or German. The course covers four years of nine months each. The fees for the four years, respectively, are $305, $300, $300 and $320. The Dean is Dr. Milton C. Winternitz. The total registration for 1925-1926 was 198; graduates, 49. The one hundred and fourteenth session begins Sept. 30, 1926, and ends June 15, 1927.

DISTRICT OF COLUMBIA

The District of Columbia, population 497,906, has three medical colleges: George Washington University Medical School, Georgetown University School of Medicine and Howard University School of Medicine.

Washington

George Washington University Medical School, 1335 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. Co-educational since 1884. The faculty is composed of 57 professors and 109 instructors, demonstrators and assistants, a total of 166. Two years of collegiate work are required for admission. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are $319, $316, $316 and $316. The Dean is Dr. William C. Borden. The total registration for 1925-1926 was 269; graduates, 46. The one hundred and second session begins Sept. 27, 1926, and ends June 8, 1927.

Georgetown University School of Medicine, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 25 professors, 101 instructors and assistants; total, 126. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for each of the four sessions, respectively, are $255, $250, $250 and $260. The Dean is Dr. George M. Kober. The registration for 1925-1926 was 276; graduates, 43. The seventy-sixth session begins Sept. 27, 1926, and ends June 8, 1927.

Howard University School of Medicine, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Co-educational since 1869. Colored students compose a majority of those in attendance. The faculty comprises 34 professors and 26 lecturers and assistants, 60 in all. The admission requirements are two years of collegiate work, including physics, chemistry, botany and zoology, English and two years of French or German. The course covers four years of thirty-three weeks each. The fees of each of the four sessions, respectively, are $212.50, $207.50, $207.50 and $214.50. The Dean is Dr. Edward A. Balloch. Registration for 1925-1926 was 227; graduates, 55. The fifty-ninth session begins Oct. 4, 1926, and ends June 17, 1927.

GEORGIA

Georgia, population 3,058,260, has two medical colleges, University of Georgia Medical Department, located in Augusta, population 55,245, and the Emory University School of Medicine in Atlanta, a city of 222,963.

In order to secure a license to practice medicine in Georgia, students must complete two years of work in an approved college of liberal arts and sciences, including courses in physics, chemistry and biology, prior to entering on the study of medicine.

Atlanta

Emory University School of Medicine, 98 N. Butler Street and Druid Hills.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of collegiate work are required for admission. The faculty has 15 professors and 115 associates and assistants, a total of 130. The course of study is four years of thirty-three weeks each. The fees for each of the four years, respectively, are $253, $233, $228 and $253. The Dean is Dr. Russell H. Oppenheimer. Total registration for 1925-1926 was 197; graduates, 57. The next session begins Sept. 29, 1926, and ends June 7, 1927.

Augusta

University of Georgia Medical Department, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. Co-education was begun in 1920. The faculty includes 14 professors and 48 assistants, 62 in all. Two years of collegiate work are required for entrance. The course is four years of thirty-four weeks each. The fees for each of the four years, respectively, are $105, $100, $100 and $100 for residents of Georgia and $300 each year for non-residents. The Dean is Dr. William H. Goodrich. The total registration for 1925-1926 was 135; graduates 24. The ninety-eighth session begins Sept. 27, 1926, and ends June 4, 1927.

ILLINOIS

Illinois, population 6,964,950, has five medical colleges, all located in Chicago, a city of 2,995,239 inhabitants. They are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Loyola University School of Medicine and the Chicago Medical School.

To be eligible for license to practice medicine in Illinois, students must complete two years of collegiate work including courses in physics, chemistry, biology and a modern language before entering on the study of medicine. In addition to their four year course in medicine they must complete also a year's internship in a hospital.

Chicago

Rush Medical College of the University of Chicago.—Founded in 1837; organized in 1843; was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago, and in 1924 became an integral part of the University of Chicago. The first class graduated in 1844. Co-educational since 1898. The faculty is composed of 137 professors, 100 associates, instructors, etc., a total of 237. The requirements for admission are four years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 140 students in each of the clinical years. No application for admission is accepted after June 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshman and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees for each of the four years, respectively, are $280, $270, $289.50 and $297.50. The Dean is Dr. Ernest E. Irons. Total registration for 1925-1926 was 538; graduates, 141. The eighty-second session begins Oct. 1, 1926, and ends June 14, 1927.

Northwestern University Medical School, 2421 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. Women students will be accepted for entrance to the medical course at the beginning of the session 1926-27. The faculty comprises 76 professors and 132 lecturers and assistants, a total of 208. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each and a year's internship in an approved hospital. The total fees are $300 each year. The Dean is Dr. Irving S. Cutter. The total registration for 1925-1926 was 415; graduates, 112. The sixty-seventh session begins Oct. 1, 1926, and ends June 20, 1927.

University of Illinois College of Medicine, 508 S. Honore Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. Co-educational since 1898. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-three weeks each, and a year's internship in an approved hospital. The faculty is composed of 68 professors, 140 assistants and instructors, a total of 208. The tuition fees are $165 each year for resident students and $35 extra for nonresidents. The Dean is Dr. David John Davis. The total registration for 1925-1926 was 493; graduates, 109. The forty-fifth session begins Oct. 4, 1926, and ends June 11, 1927.

Loyola University School of Medicine, 706 S. Lincoln St., Chicago.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Loyola University has been co-educational since 1900. Two years of college work are required for admission. The course of study is five years including an internship in a hospital. The faculty is composed of 68 professors, 45 assistants and instructors, a total of 113. The total fees are $300 each year. The Dean is Dr. Louis D. Moorhead. The total enrolment for 1925-1926 was 369; graduates, 63. The next session begins Oct. 4, 1926, and ends June 11, 1927.

Chicago Medical School, an afternoon and night school, located at 3832 Rhodes Avenue.—Organized in 1911 as the Chicago Hospital College of Medicine; chartered in 1912. In December, 1917, the classes of the Jenner Medical College were transferred to it. Co-educational since 1919. A year's internship in a hospital is required for graduation. Total registration for 1925-1926 was 147; graduates, 32. *Official reports state that the diplomas from this college are not recognized by the licensing boards of forty-seven states.*

INDIANA

Indiana, population 3,060,416, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 358,819 people, except that the work of the first year is offered also at Bloomington, the seat of the university.

Students who intend to practice medicine in Indiana must complete two years of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine.

Bloomington and Indianapolis

Indiana University School of Medicine.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879), merged into it. The first class was graduated in 1908. Co-educational since organization. The faculty consists of 74 professors and 126 lecturers, associates and assistants, a total of 200. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees each year are $175 for residents of Indiana and $250 for nonresidents. Matriculation fee, $15; microscope fee, $5 to $7.50 per semester. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Assistant Dean at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1925-1926 was 377; graduates, 80. The next session begins Sept. 13, 1926, and ends June 8, 1927.

IOWA

Iowa, population 2,505,569, has one medical college, the College of Medicine of the State University of Iowa, located in Iowa City, population 11,691.

Students who desire to practice medicine in Iowa must complete two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language; they must also have completed a year's internship in an approved hospital.

Iowa City

State University of Iowa College of Medicine, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Co-educational since 1870. The faculty is made up of 34 professors, 46 lecturers, demonstrators and assistants, a total of 80. Two years of college work, including courses in physics, chemistry, biology, French or German and English, are required for admission. The course of study covers four years of thirty-four weeks each. The tuition fee is $186 each year for residents of Iowa and $350 for nonresidents, plus a matriculation fee of $10 and a graduation fee of $15. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1925-1926 was 402; graduates, 73. The fifty-seventh session begins Sept. 20, 1926, and ends June 6, 1927.

KANSAS

Kansas, population 1,813,621, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,341, and the last two years in Kansas City, which with Kansas City, Mo., has a combined population of 483,262.

Students who desire to practice medicine in Kansas must complete at least two years of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course.

Lawrence and Kansas City

University of Kansas School of Medicine.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Kansas City. Absorbed Kansas Medical College in 1913. Co-educational since 1880. The faculty, including lecturers and clinical assistants, numbers 116. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, $125, $100, $106 and $110. For nonresidents the fees are $10 additional each year. The Dean is Dr. Harry Roswell Wahl. The total registration for 1925-1926 was 179; graduates, 37. The forty-seventh session begins Sept. 14, 1926, and ends June 6, 1927.

KENTUCKY

Kentucky, population 2,488,423, has one medical college, the University of Louisville School of Medicine, situated in Louisville, a city of 259,259 inhabitants.

To be eligible for license to practice medicine in Kentucky, students must complete two years of college work, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Louisville

University of Louisville School of Medicine, First and Chestnut Streets.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 name changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908 the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In the fall of 1922 it became more closely correlated in the University of Louisville and changed its name to the University of Louisville School of Medicine. About the same time it assumed complete control of the professional side of the Louisville City Hospital on a twelve months' basis, under an agreement with the City Administration, the Dean becoming Chairman of the Hospital Staff Executive Committee and the Professor of Medicine the Hospital Staff Executive, with the Hospital Superintendent as business manager and secretary. Co-educational since organization. Two years of college work required for admission. It has a faculty of 23 professors, 18 associate and assistant professors, 3 lecturers, 38 instructors and 30 assistants, a total of 112. Students limited to 85 Freshmen, 64 Sophomores, 70 Juniors and 70 Seniors. Course covers four years of thirty-two weeks each exclusive of vacations and examinations. Fees for four years are, respectively, $275, $275, $280 and $300. The Dean is Dr. Stuart Graves. Total registration for 1925-1926 was 260; graduates, 59. Next session begins Sept. 13, 1926, and ends June 16, 1927.

LOUISIANA

Louisiana, having a population of 1,879,024, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 414,493.

Students who desire to practice medicine in Louisiana must complete, at an approved college or university, two years of college work, including biology, physics, chemistry and a modern language, before entering on the study of medicine.

New Orleans

Tulane University of Louisiana School of Medicine, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. Co-educational since 1915. The faculty has 51 professors and 90 assistant professors, instructors and assistants, a total of 141. The course covers four years of thirty-four weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are $295, $285, $270 and $300. The Dean is Dr. Charles C. Bass. The total registration for 1925-1926 was 408; graduates, 83. The ninety-second session begins Sept. 23, 1926, and ends June 8, 1927.

MARYLAND

Maryland, with a population of 1,537,085, contains two medical colleges, located in Baltimore, a city with 796,296 inhabitants. They are as follows: Johns Hopkins University School of Medicine, and the University of Maryland School of Medicine and College of Physicians and Surgeons.

To be eligible to practice medicine in Maryland, students, in addition to a four-year high school education, must complete at least two years of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Baltimore

Johns Hopkins University School of Medicine, Washington and Monument Streets.—Organized in 1893. Co-educational since organization. The first class graduated in 1897. The faculty consists of 60 professors and 195 clinical professors, etc., a total of 255. The requirements for admission demand that the applicant possess a collegiate degree and have a knowledge of French and German (two years each of college instruction), physics and biology, such as may be obtained from a year's course, and a three years' course in chemistry. The course extends over four years of eight and one-half months each. The total fees for each year are $410. The Dean is Dr. Lewis H. Weed. Total registration for 1925-1926 was 272; graduates, 67. The thirty-fourth session begins Sept. 27, 1926, and ends June 7, 1927.

University of Maryland School of Medicine and the College of Physicians and Surgeons, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. Co-educational since 1918. The faculty consists of 85 professors and 123 instructors and assistants, a total of 208. Two years of college work are required for admission. The course covers four years of eight months each. The total fees are $280 each year for residents of the state; $380 each year for nonresidents. The Dean is Dr. J. M. H. Rowland. Total registration for 1925-1926 was 371; graduates, 70. The one hundred and twentieth session begins Sept. 27, 1926, and ends June 4, 1927.

MASSACHUSETTS

Massachusetts, population 4,127,653, has five medical colleges: Medical School of Harvard University, Boston University School of Medicine, Tufts College Medical School, College of Physicians and Surgeons and the Middlesex College of Medicine and Surgery. They are all situated in Boston, a city of 781,529, except the last named, which is in Cambridge, a city of 120,053.

Boston

Medical School of Harvard University, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 89 professors and 243 instructors and assistants, a total of 332. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fee for each of the four years is $300 plus $5 the first year for matriculation. The Dean is Dr. David L. Edsall. The total registration for 1925-1926 was 507; graduates, 128. The one hundred and forty-fourth session begins Sept. 27, 1926, and ends June 23, 1927.

Boston University School of Medicine, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Co-educational since organization. Two years of collegiate work are required for admission. The faculty includes 20 professors, 93 associates, etc., making a total of 113. The course covers four years of thirty-two weeks each. Total fees for each of the four years, respectively, are $326, $326, $326 and $336. The Dean is Dr. Alexander S. Begg. Total registration for 1925-1926 was 200; graduates, 49. The fifty-fourth session begins Sept. 20, 1926, and ends June 13, 1927.

Tufts College Medical School, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Co-educational since 1894. It has a faculty of 54 professors and 116 assistants, lecturers, etc., a total of 170. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $305, $300, $300 and $310. The Dean is Dr. Stephen Rushmore. Total registration for 1925-1926 was 482; graduates, 110. The thirty-first session begins Sept. 22, 1926, and ends June 11, 1927.

College of Physicians and Surgeons, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students, 1925-1926 was about 28. There were 9 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of forty-eight states.*

Cambridge

Middlesex College of Medicine and Surgery, Cambridge.—Organized in 1914 under the charter of the Worcester Medical College, which became extinct in 1859. A class was graduated in 1915 and each subsequent year. Was closely related in its interests with an osteopathic college and granted a liberal advanced standing for work done in osteopathic colleges. The total fees reported for each year are $175, plus a matriculation fee of $10. Total registration for 1925-1926 was 109; graduates, 26. *This college has been reported as not recognized by licensing boards of forty-eight states.* In connection with the medical licensure investigation in Connecticut in 1924 a drastic report in regard to this college was issued by the Special Grand Jury, March 14, 1924. (See The Journal, March 29, 1924, page 1062.)

MICHIGAN

Michigan, population 4,154,625, has two medical colleges: the University of Michigan Medical School, located at Ann Arbor, a city of 22,178 people, and the Detroit College of Medicine and Surgery, located at Detroit, a city of 1,242,044 inhabitants.

Students who desire to practice medicine in Michigan, in addition to an accredited four-year high school education, must complete two years of work in an approved college of liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine. Candidates must also have completed an internship in a hospital.

Ann Arbor

University of Michigan Medical School.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Co-educational since organization. It has a faculty composed of 20 professors, 27 assistant and associate professors and 45 associates, instructors, etc., a total of 92. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of French or German. The curriculum embraces four years of nine months each. The total fees for Michigan students are for men, $182 per year, and for women $175 per year, plus a matriculation fee of $10; for nonresidents, $80 per year additional. The matriculation fee for nonresidents is $25. The Dean is Dr. Hugh Cabot. The total registration for 1925-1926 was 541; graduates, 112. The seventy-seventh session begins Sept. 28, 1926, and ends June 20, 1927.

Detroit

Detroit College of Medicine and Surgery, 1516 St. Antoine St.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Co-educational since 1917. Entrance requirements are two years of college work. The faculty embraces 33 professors, 110 lecturers, etc., a total of 143. The course covers four years of nine months each and a fifth hospital intern year. The total fees each year for residents of Detroit are $200; for nonresidents, $285. The Dean is Dr. W. H. MacCraken. The total registration for 1925-1926 was 199; graduates, 50. The forty-second session begins Sept. 30, 1926, and ends June 18, 1927.

MINNESOTA

Minnesota, population 2,563,550, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis, a city of 425,435 inhabitants.

Students intending to practice medicine in Minnesota, in addition to an accredited four-year high school education, must complete two years of college work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

University of Minnesota Medical School.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Co-educational since organization. The faculty includes 123 professors and 218 instructors and assistants, a total of 341. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis and organic chemistry; eight credits of zoology, and a reading of scientific French or German. Students are required to secure a degree of B.S. or A.B. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. is conferred after a year of intern work or of advanced laboratory work has been completed. Classes are graduated three a year, in March, June and December. Total fees are $192 for residents and $222 for nonresidents, each year of the three quarters. The Dean is Dr. E. P. Lyon. The total registration for 1925-1926 was 389; graduates, 96. The thirty-eighth session begins Sept. 27, 1926, and ends June 11, 1927. The summer quarter began June 21.

MISSISSIPPI

Mississippi, population 1,790,618, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,150 inhabitants.

Students desiring to practice medicine in Mississippi, in addition to a standard four-year high school education, must complete two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

University of Mississippi School of Medicine.—Organized in 1903. Co-educational since organization. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are two years of collegiate work. The total fees each year for residents are $163; for nonresidents, $50 per year additional. The faculty numbers 17. The Dean is Dr. J. O. Crider. The total registration for 1925-1926 was 64. The twenty-fourth session begins Sept. 15, 1926, and ends June 7, 1927.

MISSOURI

Missouri, population 3,466,781, has five medical colleges. The School of Medicine of the University of Missouri is at Columbia, a town of 10,634 people. St. Louis, population 821,543, contains three medical schools, viz., the School of Medicine of St. Louis University, Washington University Medical School, and the St. Louis College of Physicians and Surgeons. Kansas City, which, with Kansas City, Kansas, has a population of 483,262, has one college, the Kansas City University of Physicians and Surgeons. The last two are reported as not approved or reputable by the Missouri State Board of Health.

Columbia

University of Missouri School of Medicine.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Co-educational since 1872. The faculty includes 12 professors and 17 assistant professors, lecturers, etc., a total of 29. The course covers two years of thirty-five weeks each. The entrance requirements are two years of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours, and general bacteriology, 3 hours. Total fees each year are $110 and $113. Nonresidents of the state pay $10 per term extra. The Dean is Dr. Guy L. Noyes. Total registration for 1925-1926 was 78. The next session begins Sept. 15, 1926, and ends June 4, 1927.

Kansas City

Kansas City University of Physicians and Surgeons, 729 Troost Street.—Originally chartered in 1903 as the Central College of Osteopathy; charter amended in 1917, by which it obtained the right to grant degrees in medicine, and the name was changed to the Central College Medical Department. Present title under a separate charter in 1918. Very liberal advanced standing allowed for work done in osteopathic colleges; reported as still having osteopathic classes. The total registration for 1925-1926 was 37; graduates, 17. Rated Class C by the Council on Medical Education and Hospitals. *Reported not recognized by the licensing boards of Missouri and of forty-eight other states.*

St. Louis

Washington University School of Medicine, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1835 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Co-educational since 1918. The faculty comprises 28 professors and 161 lecturers, instructors, etc., a total of 189. Three years of college work are required for admission, including courses in English, physics, chemistry and biology, and a reading knowledge of German or French. The course is four years of eight months each. The total fees for the four years are, respectively, $349, $344, $344 and $349. The Dean is Dr. McKim Marriott. The total registration for 1925-1926 was 309; graduates, 75. The next session begins Sept. 23, 1926, and ends June 7, 1927.

St. Louis University School of Medicine, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 76 professors and 164 lecturers and assistants, a total of 240. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each. The summer season is optional. The total fees are $325 each year. The Dean is Dr. Hanau W. Loeb. The total registration for 1925-1926 was 502; graduates, 107. The next session begins Oct. 1, 1926, and ends June 1, 1927.

St. Louis College of Physicians and Surgeons, Jefferson and Gamble Streets.—Organized in 1869. Classes graduated in 1870 and each subsequent year until 1873, when it suspended. Reorganized in 1879. Classes graduated in 1880 and subsequent years until 1915, when it merged with the Medical Department of the National University of Arts and Sciences. Reestablished in 1916. Its Dean is Dr. Waldo Briggs. The total registration for 1925-1926 was 50; graduates, 16. *This college is reported as not recognized by the licensing boards of Missouri and forty-eight other states.* This school was closely involved with the Missouri diploma mill ring which was exposed in 1923 as shown by the drastic report regarding it issued by the Connecticut Special Grand Jury, March 14, 1924. (See The Journal, April 5, 1924, page 1140.)

NEBRASKA

Nebraska, population 1,355,371, has two medical colleges, the University of Nebraska College of Medicine and the Creighton University School of Medicine, both in Omaha, population 211,768.

Omaha

Creighton University School of Medicine, Fourteenth and Davenport Streets.—Organized in 1892 by the John A. Creighton Medical College. Present title in 1921. The first class graduated in 1893. Co-educational since organization. It has a faculty of 34 professors and 44 instructors, lecturers and assistants, a total of 78. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. The total fees each year for the four years are, respectively, $230, $215, $215 and $215. The Dean is Dr. Hermann von W. Schulte. Total registration for 1925-1926 was 194; graduates, 38. The forty-fifth session begins Sept. 23, 1926, and ends June 2, 1927.

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. Co-educational since 1882. The faculty is composed of 48 professors and 64 lecturers and instructors, total 112. Two years of collegiate work are required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years, respectively, are $185, $170, $160 and $160. The Dean is Dr. J. Jay Keegan. Total registration for 1925-1926, was 274; graduates, 66. The next session begins Sept. 20, 1926, and ends June 4, 1927.

NEW HAMPSHIRE

New Hampshire, population 450,171, has one medical college, located at Hanover, population 1,551.

Students desiring to practice medicine in New Hampshire, in addition to a four-year high school education, must complete at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

Dartmouth Medical School.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 12 professors and 3 instructors, a total of 15. Three years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for the first year are $400 and $410 for the second year. The acting Dean is Colin C. Stewart, Ph.D. The total registration for 1925-1926 was 35. The next session opens Sept. 22, 1926, and ends June 21, 1927.

NEW YORK

New York State, population 11,105,625, has nine medical colleges. Five of these, College of Physicians and Surgeons (Columbia University), Cornell University Medical College, the University and Bellevue Hospital Medical College, Long Island College Hospital and the New York Homeopathic Medical College and Flower Hospital, are located in New York City, population 5,927,625. Albany Medical College is located in Albany, a city of 117,820 people. The University of Buffalo Medical Department is situated in Buffalo, population 538,016. The College of Medicine, Syracuse University, is in Syracuse, a city of 182,003 inhabitants. The University of Rochester School of Medicine is located in Rochester, a city of 316,786 inhabitants.

Students who desire to practice in New York must complete two years of college work before entering on the study of medicine.

Albany

Albany Medical College, 58-64 Eagle Street.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed education control. Co-educational since 1915. The faculty is composed of 25 professors and 75 instructors, assistants, etc., a total of 100. Two years of collegiate work, including college courses in physics, chemistry (including organic and analytic), biology, English, and a modern foreign language, are required for admission. The curriculum covers four years of eight months each. The total fees for the four years, respectively, are $320, $305, $305 and $305. The Dean is Dr. Thomas Ordway. The total registration for 1925-1926 was 93; graduates, 16. The ninety-sixth session begins Sept. 28, 1926, and ends June 13, 1927.

Buffalo

University of Buffalo Medical Department, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Co-educational since organization. The faculty is composed of 60 professors and 103 lecturers, assistants, etc., a total of 163. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German, are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $327, $317, $317 and $327. The Dean is Dr. C. Sumner Jones. Total registration for 1925-1926 was 255; graduates, 47. The eighty-first session begins Sept. 20, 1926, and ends June 8, 1927.

New York

Columbia University College of Physicians and Surgeons, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. Co-educational since 1917. The faculty is composed of 124 professors and 310 instructors, demonstrators, etc., a total of 434. Two years of collegiate work of 72 points, including courses in physics, chemistry, biology, English and either French or German, are required for admission. The work covers four years of eight months each. The Dean is Dr. Willian Darrach. The total fees for the four years, respectively, are $527, $518, $512 and $532. Total registration for 1925-1926 was 401; graduates, 96. The one hundred and nineteenth session begins Sept. 22, 1926, and ends June 1, 1927.

Cornell University Medical College, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or in New York. Co-educational since organization. The faculty is composed of 70 professors and 130 assistants, lecturers, instructors, etc., a total of 200. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have a knowledge of physics, chemistry, biology, English and a modern language. The fees for each of the four years are, respectively, $510, $500, $500 and $525. The Dean is Dr. Walter L. Niles. Total registration for 1925-1926 was 274; graduates, 63. The twenty-ninth session begins Sept. 27, 1926, and ends June 9, 1927.

Long Island College Hospital, 350 Henry Street, Brooklyn.—Organized in 1858. The first class graduated in 1860. Co-educational since 1918. It has a faculty of 81 professors and 105 assistants, instructors, etc., a total of 186. At least two years of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are $443, $416, $435 and $440. The Dean is Prof. Adam M. Miller. Total registration for 1925-1926 was 394; graduates, 90. The sixty-eighth session begins Sept. 27, 1926, and ends June 4, 1927.

New York Homeopathic Medical College and Flower Hospital, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. Co-educational since 1919. The course covers four years of eight months each. It has a faculty of 52 professors and 55 lecturers and assistants, a total of 107. The total fees for the four years are, respectively, $430, $405, $395 and $410. The Dean is Dr. Claude A. Burrett. Total registration for 1925-1926 was 214; graduates, 41. The sixty-seventh session begins Sept. 17, 1926, and ends May 7, 1927.

University and Bellevue Hospital Medical College, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. Co-educational since 1919. The faculty is composed of 81 professors, associate professors and assistant professors, and 145 lecturers, instructors, etc., in all, 226. The course covers four years of eight months each. Entrance requirements are 72 semester hours of collegiate work in a registered college leading to a bachelor's degree, including courses in physics, chemistry and biology. The fees for each of the four years, respectively, are $535, $523, $512 and $530. The Dean is Dr. Samuel A. Brown. Total registration for 1925-1926 was 408; graduates, 88. The next session begins Sept. 15, 1926, and ends June 8, 1927.

Rochester

University of Rochester School of Medicine, Elmwood Ave.—Organized in 1925 as the Medical Department of the University of Rochester. Co-educational since organization. The faculty is composed of 17 professors, 78 lecturers, assistants, instructors, etc., a total of 95. The work embraces a graded course of 4 years of 9 months each. Three years of collegiate work are required for admission. The total fees for each year are $300. The total registration for 1925-1926 was 22. The Dean is Dr. George H. Whipple. The second session begins Sept. 23, 1926, and ends June 20, 1927.

Syracuse

Syracuse University College of Medicine, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Co-educational since organization. The faculty is composed of 26 professors and 115 associate and assistant professors, lecturers and instructors, a total of 141. Two years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fees for each of the first three years are $330, for the fourth year $340. The Dean is Dr. Herman G. Weiskotten. The total enrolment for 1925-1926 was 173; graduates, 40. The fifty-sixth session begins Sept. 17, 1926, and ends June 13, 1927.

NORTH CAROLINA

North Carolina, population 2,759,014, has two medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,483. Wake Forest College School of Medicine is at Wake Forest, population 1,425.

Students intending to practice medicine in North Carolina must complete two years of college work including courses in physics, chemistry and biology in addition to 14 units of high school work before beginning the study of medicine.

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Co-educational since 1914. Two years of collegiate work are required for admission. The faculty is composed of 8 professors and 1 instructor, a total of 9. The fees for each year are $220. The Dean is Dr. I. H. Manning. The total registration for 1925-1926 was 80. The forty-first session begins Sept. 17, 1926, and ends June 2, 1927.

Wake Forest

Wake Forest College School of Medicine.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 10 professors and 8 assistants. Only the first two years of the medical course are offered. After the completion of freshman and sophomore college work and two years of medicine, a certificate will be given. The B.S. degree in medicine will be given only after completion of three years of college work and two years of medicine. Each annual course extends over nine months. The fees for each year aggregate $208. The Dean is Dr. Thurman D. Kitchin. The total registration for 1925-1926 was 40. The twenty-fifth session begins Sept. 14, 1926, and ends June 3, 1927.

NORTH DAKOTA

North Dakota, population 686,424, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 14,811 people. It gives only the first two years of the medical course.

Students intending to practice medicine in North Dakota, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine, and must show evidence of having spent at least one year as an intern in a hospital.

University

University of North Dakota School of Medicine.—Organized in 1905. Offers only the first two years of the medical course. Co-educational since organization. Two years' work in a college of liberal arts is required for admission. The fees are about $60 each year for resident students and $100 for nonresidents. The faculty consists of 6 professors and 9 instructors, a total of 15. The Dean is Dr. H. E. French. The total registration for 1925-1926 was 51. The twenty-first session begins Sept. 18, 1926, and ends June 14, 1927.

OHIO

Ohio, population 6,321,539, has four medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 409,333 inhabitants. Cleveland, population 936,455, contains one medical school, Western Reserve University School of Medicine. Columbus, population 279,836, contains the Ohio State University College of Medicine.

Cincinnati

University of Cincinnati College of Medicine, Eden Avenue, Cincinnati General Hospital.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Co-educational since organization. Two years of college work are required for admission. The faculty consists of 79 professors and 129 associates, assistants, etc., a total of 208. The course covers four years of eight months each. A year's internship in an approved hospital is also required. The total fees for each of the four years are, respectively, $372.50, $372.50, $350 and $330. The Dean is Dr. Arthur C. Bachmeyer. The total registration for 1925-1926 was 258; graduates, 55. The next session begins Sept. 27, 1926, and ends June 18, 1927.

Eclectic Medical College, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. Co-educational since 1871. It has a faculty of 20 professors and 24 lecturers and assistants, a total of 44. Pending completion of a reorganization no new students will be admitted to any of the classes. The course covers four years of eight months each. The total fees for the four years, respectively, are $220, $210, $210 and $210. The Dean is Dr. R. L. Thomas. Total registration for 1925-1926 was 144; graduates, 38. The next session begins Sept. 16, 1926, and ends May 16, 1927.

Cleveland

Western Reserve University School of Medicine, 2109-15 Adelbert Road.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Co-educational since 1919. The faculty includes 19 professors and 160 lecturers, assistants, etc., a total of 179. The curriculum embraces three years of eight and one-half months each and one year of eleven months. Three years of college work are required for admission. The total fees for each of the four years are, respectively, $325, $310, $300 and $310. The Dean is Dr. C. A. Hamann. The total registration for 1925-1926 was 220; graduates, 48. The eighty-fourth session begins Sept. 30, 1926, and ends June 16, 1927.

Columbus

Ohio State University College of Medicine, University Campus. —Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Co-educational since organization. The faculty consists of 48 professors and assistant professors, 63 lecturers, instructors, demonstrators, etc., a total of 111. Two years of collegiate work are required for admission. The course covers four years of 34 weeks each. Tuition fees are $180 each year for residents of Ohio; for nonresidents, the fees are $285. The Dean is Dr. Eugene F. McCampbell. The total registration for 1925-1926 was 320; graduates, 76. The next session begins Sept. 28, 1926, and ends June 14, 1927.

OKLAHOMA

Oklahoma, population 2,253,536, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given on the academic campus at Norman, a city of about 5,004 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 101,150 and which is eighteen miles north of Norman.

Students intending to practice medicine in Oklahoma, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to beginning the study of medicine.

Norman and Oklahoma City

University of Oklahoma School of Medicine.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. The first class graduated in 1911. Co-educational since organization. It has a faculty of 30 professors and 59 lecturers, assistants, etc., a total of 89. Two years of college work are required for admission. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, $80, $75, $25 and $25. For students residing outside the State of Oklahoma there is a tuition fee of $200 per year. The Dean is Dr. LeRoy Long, School of Medicine Building, Third and Stiles Street, Oklahoma City, Okla. The total registration for 1925-1926 was 165; graduates, 40. The twenty-seventh session begins Sept. 16, 1926, and ends June 7, 1927.

OREGON

Oregon, population 846,061, has one medical college, the University of Oregon Medical School, located in Portland, a city of 282,383 population.

Portland

University of Oregon Medical School, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Co-educational since organization. It has a faculty of 52 professors and 104 lecturers, assistants, etc., a total of 156. Entrance requirements are three years of college work or its equivalent. The course is four years of thirty-four weeks each. The total fees for the four years are, respectively, $200, $195, $190 and $190 for residents of Oregon, and $60 per year additional for nonresidents. The Dean is Dr. Richard B. Dillehunt. The total registration for 1925-1926 was 224; graduates, 49. The fortieth session begins Sept. 28, 1926, and ends June 13, 1927.

PENNSYLVANIA

Pennsylvania, population 9,317,647, has six medical colleges. Of these, Philadelphia, having a population of 1,979,364, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 631,563.

Students intending to practice medicine in Pennsylvania, in addition to a four-year high school education, must complete a year's work in an approved college of liberal arts, including college courses in physics, chemistry and biology, before beginning the study of medicine. They must also have completed an internship of at least one year in an approved hospital.

Philadelphia

University of Pennsylvania School of Medicine, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania, was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Co-educational since 1916. The faculty consists of 68 professors, associate and assistant professors, and 168 lecturers, associates, instructors, etc., a total of 236. Three years of college work are required for admission, including courses in physics, biology or zoology, chemistry, including general inorganic, organic and analytical, English and French or German. The first class is limited to 110 students; third and fourth to 135 each. The course embraces four years of study of thirty-three weeks each. The total fees for each of the four years are, respectively, $405, $375, $375 and $375 for men and $15 less per year for women students. The Dean is Dr. William Pepper. Total registration for 1925-1926 was 473; graduates 133. The one hundred and sixty-first session begins Sept. 24, 1926, and ends June 15, 1927.

Jefferson Medical College, Tenth and Walnut Streets.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Cannonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 49 professors, associate and assistant professors, and 131 associates, lecturers, demonstrators and instructors, a total of 180. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition two years of work leading to a degree in an approved college of arts and science amounting to at least 60 semester hours, including specified courses in physics, general and organic chemistry and biology, with laboratory work in each subject. The course of study covers four years of eight and a half months each. The fees are about $325 each year, with a matriculation fee of $10 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1925-1926 was 579; graduates, 144. The one hundred and second session begins Sept. 22, 1926, and ends June 3, 1927.

Woman's Medical College of Pennsylvania, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 17 professors and 57 assistants, lecturers, etc., in all, 74. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $255, $275, $250 and $260. The Dean is Dr. Martha Tracy. The total registration for 1925-1926 was 100; graduates, 29. The seventy-seventh session begins Sept. 29, 1926, and ends June 8, 1927.

Hahnemann Medical College and Hospital of Philadelphia, 220-24 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical

College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 52 professors and 70 lecturers, instructors, etc., in all, 122. The work covers four years of eight and a half months each. Total fees are $325 each year. The Dean is Dr. William A. Pearson. The total registration for the college year 1925-1926 was 244; graduates, 39. The seventy-ninth session begins Sept. 27, 1926, and ends June 2, 1927.

The Temple University School of Medicine, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. Co-educational since organization. The faculty numbers 20 professors and 114 associates, assistants, etc., a total of 134. Two years of college work are required for admission. The fees for each of the four years, respectively, are $295, $280, $280 and $280. The Dean is Dr. Frank C. Hammond. The total registration for 1925-1926 was 224; graduates, 51. The twenty-sixth session begins Sept. 21, 1926, and ends June 16, 1927.

Pittsburgh

University of Pittsburgh School of Medicine, Bigelow Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Co-educational since 1899. The faculty is composed of 17 professors and 146 associates, assistants, etc., 163 in all. Entrance requirements are two years of college work, including English, chemistry (inorganic and organic), physics and biology. The course of study is four years of eight and a half months each. The total fees for the four years, respectively, are $327.50, $312.50, $312.50 and $322.50. The Dean is Dr. Raleigh R. Huggins. The total registration for 1925-1926 was 229; graduates, 47. The forty-first session begins Sept. 20, 1926, and ends June 8, 1927.

SOUTH CAROLINA

South Carolina, population 1,779,084, has one medical college, situated in Charleston, a city of 73,125 people.

Students intending to practice medicine in South Carolina must complete, in addition to 14 units of high school work, two years in an approved college, including courses in English, physics, chemistry and biology.

Charleston

The Medical College of the State of South Carolina, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Co-educational from 1895 to 1912, when privileges for women were withdrawn, but they were restored in 1917. It has a faculty of 35 professors and 25 lecturers, instructors, etc., a total of 60. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission, in addition to a standard high school preparation. The total fees are $175 annually. The Dean is Dr. Robert Wilson. Total enrolment for 1925-1926 was 156; graduates, 38. The ninety-eighth session begins Sept. 23, 1926, and ends June 2, 1927.

SOUTH DAKOTA

South Dakota, population 666,380, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,590 people.

Students intending to practice medicine in South Dakota must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. They must also have completed a year's internship in an approved hospital.

Vermilion

University of South Dakota College of Medicine.—Organized in 1907. Co-educational since organization. Offers only the first two years of the medical course. Two years' work in a college of liberal arts are required for admission. The fees are $100 each year. The faculty numbers 11. The acting Dean is Dr. George R. Albertson. The total registration for 1925-1926 was 36. The twentieth session begins Sept. 15, 1926, and ends June 6, 1927.

TENNESSEE

Tennessee, population 2,424,616, has three medical colleges. Of these, Vanderbilt University School of Medicine and Meharry Medical College are situated in Nashville, a city with a population of 136,220. The College of Medicine of the University of Tennessee is located in Memphis, population 174,533.

Students intending to practice medicine in Tennessee must complete two years of collegiate work, including courses in physics, chemistry, biology and a modern language, in addition to a four-year high school course, before entering on the study of medicine.

Memphis

University of Tennessee College of Medicine, 879 Madison Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Co-educational since 1911. The faculty includes 54 professors and 98 assistants, instructors, etc., a total of 152. Entrance requirements are a high school education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years, respectively, are $132, $127, $127 and $152 for residents of the state, and $100 more each year for nonresidents. The administrative officer is Orren W. Hyman, Ph.D. Total registration for 1925-1926 was 231; graduates, 47. The next session begins Sept. 27, 1926, and ends June 16, 1927.

Nashville

Vanderbilt University School of Medicine.—This school was founded in 1874. The first class graduated in 1875. Co-educational since September, 1925. The faculty consists of 50 professors and 98 lecturers, a total of 148. Beginning in 1925 students must have successfully completed at least three years of college work with such grades as will entitle them to receive the Bachelor's degree after one year in the School of Medicine. The course covers four years of nearly nine months each. The total fees for the four years, respectively, are $215, $215, $215 and $240. The Dean is G. Canby Robinson. The total registration for 1925-1926 was 185; graduates, 52. The fifty-third session begins Sept. 22, 1926, and ends June 8, 1927.

Meharry Medical College. Colored. 1118 First Avenue, South.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1916. Co-educational since 1876. The faculty is made up of 28 professors and 17 instructors, demonstrators, lecturers, etc., 45 in all. Two years' work in a college of liberal arts are required for admission. The work embraces four years of thirty-two weeks each. The total fees for the four years, respectively, are $173, $165, $165 and $185. The President is Dr. John J. Mullowney. Total registration for 1925-1926 was 225; graduates, 47. The fifty-first session begins Oct. 1, 1926, and ends May 25, 1927.

TEXAS

Texas, population 5,097,574, has two medical colleges. The University of Texas School of Medicine is located at Galveston, a city of 48,375 inhabitants. The Baylor University College of Medicine is located in Dallas, population 158,976.

Students intending to practice medicine in Texas must complete at least two years of collegiate work, including courses in physics, chemistry, biology and a modern language, in addition to a standard four-year high school course, before entering on the study of medicine.

Dallas

Baylor University College of Medicine, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Co-educational since 1900, the date of organization. The first class graduated in 1901. The faculty consists of 52 professors and 56 instructors and assistants, a total of 108. Entrance requirements are two years of college work in addition to a four-year high school education. The course is four years of eight months each. The fees for each of the four years, respectively, are $268, $258, $248 and $248. The Dean is Dr. Walter H. Moursund. Total registration for 1925-1926 was 278; graduates, 39. The twenty-seventh session begins Oct. 1, 1926, and ends May 30, 1927.

Galveston

University of Texas School of Medicine, Avenue B, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. Co-educational since organization. It has a faculty of 19 professors and 31 lecturers and instructors, a total of 50. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four year high school education. The freshman class is limited to 60 students on a scholarship basis, Texans having preference. The total fees for the four years, respectively, are $198, $173, $175 and $173 for residents of the state, and $150 additional each year for nonresidents. The Acting Dean is Dr. Henry Hartman. Total registration for 1925-1926 was 224; graduates, 69. The thirty-sixth session begins Oct. 1, 1926, and ends May 31, 1927.

UTAH

Utah, population 492,478, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 130,940 people.

Students intending to practice medicine in Utah, in addition to a four-year high school education, must complete at least two years of collegiate work, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Salt Lake City

University of Utah School of Medicine.—Organized in 1906. Co-educational since organization. Gives only first two years of medical course. Each course covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 6 professors and 12 lecturers and assistants, a total of 18. The fees are $150 each year. The Dean is Dr. Ralph O. Porter. Total registration for 1925-1926 was 47. The twentieth session begins Sept. 27, 1926, and ends June 6, 1927.

VERMONT

Vermont, population 352,428, has one medical school, located at Burlington, a town of 24,089 people.

Students who desire to practice medicine in Vermont, in addition to a standard four-year high school education, must complete two years of collegiate work, including college courses in physics, chemistry and biology, before entering on the study of medicine.

Burlington

University of Vermont College of Medicine, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Co-educational since 1920. It has a faculty of 23 professors and 17 lecturers, instructors, etc., a total of 40. Two years of college work in addition to a four-year high school education are required for admission. The course of study covers four years of nine months each. For residents of Vermont the total fees are $245 each year for men and $5 less per year for women students. Nonresidents are charged an additional $75 each year. The Dean is Dr. James N. Jenne. The total registration for 1925-1926 was 104; graduates, 26. The next session begins Sept. 15, 1926, and ends June 16, 1927.

VIRGINIA

Virginia, population 2,449,443, has two medical colleges, one, the Department of Medicine of the University of Virginia, situated in Charlottesville, population 11,211, and the Medical College of Virginia at Richmond, population 186,403.

Students desiring to practice in Virginia must be graduates of medical colleges which require that all students admitted shall have completed two years of collegiate work, including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

University of Virginia Department of Medicine.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Co-educational since the session 1920-21. It has a faculty of 27 professors and 20 lecturers, instructors, assistants, etc., a total of 47. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology. For residents of Virginia the total fees for the four years, respectively, are $255, $255, $205 and $195. Nonresidents are charged an additional $20 each year. The Acting Dean is Dr. James C. Flippin. The total registration for 1925-1926 was 241; graduates, 45. The ninety-eighth session begins Sept. 16, 1926, and ends June 14, 1927.

Richmond

Medical College of Virginia, Twelfth and Clay Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Co-educational since 1918. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 40 professors and 101 lecturers, instructors, etc., a total of 141. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and English. The course embraces four years of eight months each. Total fees for the four years, respectively, are $295, $295, $286 and $316. The Dean is Dr. Manfred Call. The total registration for 1925-1926 was 342; graduates, 81. The eighty-ninth session begins Sept. 14, 1926, and ends May 31, 1927.

WEST VIRGINIA

West Virginia, population 1,601,130, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 13,811 population.

Students who desire to practice medicine in West Virginia must complete, in addition to a high school education, two years of collegiate work, including courses in physics, chemistry and biology, before entering on the study of medicine.

Morgantown

West Virginia University School of Medicine.—Organized in 1902, and gives only the first two years of the medical course. Co-educational since organization. Two years of college work are required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 17. Fees: For residents of the state, $95 each year; for nonresidents, $245. Cadets pay laboratory fees only. The Dean is Dr. John N. Simpson. The total registration for 1925-1926 was 117. The next session begins Sept. 21, 1926, and ends June 14, 1927.

WISCONSIN

Wisconsin, population 2,801,008, has two medical colleges, one, the Medical School of the University of Wisconsin, located at Madison, a city of 46,385 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 509,192 people.

Students intending to practice medicine in Wisconsin, prior to entering a medical school, must complete, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and a modern language.

Madison

University of Wisconsin Medical School.—Organized in 1907. Co-educational since organization. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 51 professors and 56 lecturers, instructors, etc., a total of 107. Tuition fees: $125 per year for nonresidents of Wisconsin. Incidental and laboratory fees for both resident and nonresident students average about $100 per year. The Dean is Dr. Charles R. Bardeen. The registration for 1925-1926 was 219. The nineteenth session begins Sept. 22, 1926, and ends June 20, 1927.

Milwaukee

Marquette University School of Medicine, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Co-educational since organization. It has a faculty of 138. The entrance requirements are two years of college work, including courses in physics, chemistry, biology and a modern foreign language. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees for the four years, respectively are, $313, $303, $303 and $283. The Dean is Dr. Louis F. Jermain; the Dean of students is Dr. Eben J. Carey. The registration for 1925-1926 was 263; graduates, 50. The fifteenth session begins Sept. 27, 1926, and ends June 15, 1927.

PHILIPPINE ISLANDS

The Philippine Archipelago, with a population of 11,075,674, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the University of St. Thomas College of Medicine and Surgery. They are located in the city of Manila, which in 1918 had a population of 285,500.

Manila

University of the Philippines College of Medicine, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. In 1910 the title was changed to University of the Philippines College of Medicine and Surgery. Present title in 1923. The faculty includes 42 professors and 43 lecturers, assistants, etc., a total of 85. A two-year collegiate course, including courses in English, physics, chemistry, biology and either French or German, is required for admission. The course extends over five years. In the fifth year the students serve as interns in the Philippine General Hospital. The fees for the four years, respectively, are $81, $74, $59 and $56. The Dean is Dr. Fernando Calderon. The total registration for 1925-1926 was 201; graduates, 29. The twenty-first session began about June 14, 1926, and ends about March 14, 1927.

University of St. Thomas College of Medicine and Surgery. Manila.—Organized in 1907. The faculty includes 27 professors and 16 assistants, instructors, etc., a total of 43. A two-year collegiate course is required for admission. The course of study is five years, including an internship in a hospital. The registration for 1925-1926 was 486; graduates, 64. The Dean is Jose L. de Castro.

CANADA

The Dominion of Canada has nine medical colleges, all of which require a six-year course, including courses in physics, chemistry and biology. This course is equal to that in the medical schools of the United States which require two years of college work for admission, including the science courses named.

Alberta

University of Alberta, Faculty of Medicine, Edmonton.—Organized in 1913 Co educational since organization Has given the complete six year medical course since 1924. The faculty includes 36 professors and 46 instructors, assistants, etc, a total of 82 Fees for each year are $202 The Dean is Dr. Allan C Rankin The registration for 1925 1926 was 114, graduates, 17. The fourteenth session begins Sept 29, 1926, and ends May 13, 1927.

Manitoba

University of Manitoba Faculty of Medicine, Winnipeg.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title Co educational since organization The faculty includes 55 professors and 82 instructors, assistants, etc, a total of 137. The total fees for the four years, respectively, are $180, $175, $185 and $185. Matriculation requirements include two years of college work in the faculty of Arts and Science of a recognized university subsequent to the complete high school course required for entrance to the latter The course extends over five years of eight months each The Dean is Dr. S Willis Prowse Total registration for 1925 1926 was 259, graduates, 53 The next session begins Sept. 30, 1926, and ends May 30, 1927.

Nova Scotia

Dalhousie University, Faculty of Medicine, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875 Reorganized as an examining faculty, separate from the Halifax Medical College, in 1855 In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license First class graduated in 1872 Co educational since 1871 It has a faculty of 29 professors and 31 lecturers and demonstrators, a total of 60 Requires for matriculation two years of Arts and a graded course of five years, including a portion of the premedical courses in physics and chemistry The fees are $200 each year The total registration for 1925 1926 was 121, graduates, 35 The Dean is Dr John Stewart. The next session begins Sept 14, 1926, and ends May 17, 1927.

Ontario

University of Toronto, Faculty of Medicine, Toronto—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College Co-educational since 1903 The course of study covers six years of eight months each, the first two being devoted largely to physics, chemistry, biology and cultural courses in history, science and English It has a faculty of 64 professors and 202 lecturers, associates, etc, a total of 266 The fees are $163 for the first five years and $191 for the sixth year The Dean is Dr Alexander Primrose The total registration for 1925 1926 was 777; graduates, 193 The next session begins Sept 28, 1926, and ends May 28, 1927

Queen's University Faculty of Medicine, Kingston—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston In 1892 the school again became a part of Queen's University. The faculty numbers 48 The fees for the six years are, respectively, $148, $151, $146, $160, $160, and $180 The last includes the fee of $30 for the M D, C M degrees The course covers six years of thirty teaching weeks each, the first including courses in physics, chemistry, biology, history or economics The total registration in 1925 1926 was 309; graduates, 52 The Dean is Dr J C Connell The next session begins Sept 29, 1926, and ends May 25, 1927

University of Western Ontario Medical School, London, Ontario—Organized in 1881 as the Western University, Faculty of Medicine, first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923 The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913 Co educational since 1913. The faculty numbers 71 Two years of premedical college work, including courses in physics, chemistry and biology, are required for admission to a four year medical course—all of which are referred to as a six year medical course. The total fees for the last four years, respectively, are $140, $140, $148 and $173. The Dean is Dr Paul S McKibben Total registration for 1925-1926 was 109; graduates, 19 The next session begins Sept 22, 1926, and ends May 27, 1927

Montreal

McGill University, Faculty of Medicine—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829, first class graduated under the university auspices in 1833 No session between 1836 1839 owing to political troubles In 1905 it absorbed the Faculty of Medicine of the University of Bishop College Co educational since 1919 The course consists of two premedical years, four medical years of eight months each, and a fifth year of hospital intern work The faculty consists of 50 professors and 119 lecturers, etc, a total of 169 The total fees for each of the four medical years are $277, $232, $232 and $232, respectively The total registration for 1925 1926 was 472; graduates, 97. The Dean is Dr C. F Martin. The next session begins Sept 20, 1926, and ends April 29, 1927.

University of Montreal Faculty of Medicine, Montreal—Organized in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed Present name, by act of Parliament, in 1920 A class was graduated in 1843 and in each subsequent year One woman student admitted in the fall 1925 The faculty numbers 89 The course extends over six years, including preliminary courses in physics, chemistry and biology The total fees for each of the five years, respectively, are $207, $200, $242, $214 and $207 The Dean is Louis de Lotbiniere Harwood The total registration for 1925 1926 was 173; graduates, 12. The next session begins Sept 15, 1926, and ends June 15, 1927.

Quebec

Laval University Faculty of Medicine, Quebec—The Quebec School of Medicine, organized in 1848, became in 1852 the Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year The faculty numbers 57. The fees are $150 each year The course extends over six years, including preliminary courses in physics, chemistry and biology. The Secretary is Dr Arthur Vallee, Quebec Total registration for 1925 1926 was 220; graduates, 39.

GRADUATE MEDICAL EDUCATION IN THE UNITED STATES

Revised to Aug. 21, 1926

The Council's chief desire is to cooperate with postgraduate teaching institutions and hospitals, providing residences in the specialties and bringing about a general adoption of the principles concerning graduate medical education which were endorsed by the House of Delegates of the American Medical Association in June, 1923.

There is no desire to prevent any physician from getting any course he needs, nor to assume authority over any individual or any graduate teaching institution, nor to prevent them from offering to physicians any courses they see fit. If an institution desires to have the Council's endorsement of its work or of any particular course offered, however, it should not be unwilling to comply with the principles which are presented herewith and which are believed to be fair and just.

The principles aim to provide more abundant facilities for the training of general practitioners; the fact being recognized that any course of instruction which will improve the physician's knowledge or skill will be of service, both to him and to his patients. At the same time, it is believed that much better instruction will be furnished if the courses are arranged in a graded series whereby he can progress from one course to another and know that he is continually advancing in his work.

From courses leading to the specialties in graduate schools and in hospitals, the council is withholding its approval where arrangements are such that physicians are enabled to rush into some specialty without having developed the knowledge and skill which would justify such action. Here again, there is no attempt to prevent any physician from taking any course he desires, nor to hinder an individual or institution from offering instruction in any course. The Council merely asks that such courses be given in accordance with certain principles if they are to have the Council's endorsement.

The principles apply chiefly to certain courses which, to a deplorable extent, are being used as short-cuts to the practice of specialties by many who do not obtain therefrom the proficiency which should be required. Neither the American Medical Association nor any other body of self-respecting people would endorse such a procedure; nor should they appear to do so by failing to do what they can to prevent it. The Council is withholding its approval from certain courses until adequate safeguards against their abuse have been established by the institutions offering such courses. These safeguards can be established without much difficulty by the graduate medical schools, (*a*) by having their courses properly graded; (*b*) by ascertaining the educational and professional qualifications of the physician-students, (*c*) by offering the operation course as one of a group of courses which includes review and diagnostic courses all of which are given for a common fee, and (*d*) by admitting to any course only those students who are found to possess the essential prerequisite work or training. Such grading is, indeed, more essential for graduate students than for undergraduates, since the qualifications of the former now vary to a greater extent.

The courses most commonly utilized as short cuts are the operative courses, such as operative surgery on the dog or the cadaver and like courses in orthopedic surgery, urology, gynecology, ophthalmology and otolaryngology.

As now given, most of these courses do not provide even the minimum requisite knowledge of diagnostic, laboratory or operative technic, much less the essential review courses in the preclinical sciences; the needed experience in the examination of patients; the diagnosis of the diseases covered by the specialty, and particularly the recognition of conditions which require operative treatment. Furthermore, some of the courses offered are independent of and make no provision for residencies or assistantships where the graduate student can subsequently develop skill in applying his special knowledge in the care and treatment of patients while still under the supervision of a recognized expert in the particular specialty before he begins his operative procedures in his own independent practice. These principles apply particularly to the surgical specialties and to the application of operative procedures, since an unnecessary surgical operation, on the eye, for example, may handicap a patient for the balance of his lifetime. The portion of the principles regarding graduate medical schools which bear on this particular matter is given in paragraph 4.

Where courses leading to specialization in any of the subjects enumerated are properly graded, and where the graduate school carefully investigates the previous training of the individual physician before assigning him to courses of instruction, it will not matter so much whether the student is merely preparing himself for better work in his general practice, or whether he is intending later to practice as a specialist.

The investigations during the last few years of the various postgraduate medical schools have revealed a deplorable lack of courses to which any standardizing body could give an unqualified approval because they are not graded and are not administered in accordance with any definite principles or standards. It is gratifying to note that the postgraduate teaching institutions have largely abandoned the giving of diploma-like certificates to students taking short courses.

It is the Council's desire to cooperate most heartily with any institution in an effort to develop its graduate teaching so as to provide in the United States more well organized and well administered courses of graduate medical instruction. This is clearly the greatest need in medical education today.

PRINCIPLES REGARDING GRADUATE OR POSTGRADUATE MEDICAL SCHOOLS

The following principles were adopted by the House of Delegates in June, 1923, as a basis for the grading of graduate medical schools:

1. *Admission Requirements.*—The minimum admission requirement for those wishing to prepare themselves for the practice of a specialty should be graduation from an acceptable (Class A) medical college and completion of at least one year's internship in an approved hospital, or the experience gained by at least five years spent in the active practice of medicine. In the case of reputable physicians who desire to improve themselves for general practice, lenient admission requirements are justified. Courses for *general practitioners* should be open to all physicians who have received the degree of Bachelor or Doctor of Medicine from medical colleges considered acceptable by this Council, or to reputable physicians who were licensed in certain states before graduation was required.

2. *Records.*—Records should be kept by each institution showing (*a*) the preliminary and professional entrance qualifications of every student, which should be verified by authentic or documentary evidence; (*b*) previous attendance at graduate courses and subjects taken; (*c*) the subjects for which he is enrolled; (*d*) evidence of his faithful attendance at his work; (*e*) evidence of the student's proficiency as demonstrated by research work, examinations or otherwise, and (*f*) whether an advanced degree or certificate was granted.

3. *Supervision.*—There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals as determined by the present day needs of graduate medical education.

4. *Curriculum and Grading of Instruction Offered.*—The graduate school should have its various courses of instruction so graded that the student, if he desires, can obtain progressive work in a continuous course of two or three years,[1] as may be necessary to prepare him satisfactorily for the practice of a chosen specialty. If it is found that at some previous time the student has satisfactorily completed certain portions of the work, he might be given advanced standing and thereby enabled to complete his preparation in a shorter time.

Where short operation courses are offered in any of the clinical specialties, they should be combined with review, diagnostic and clinical courses arranged either in one group for which a common fee is charged, or in a graded series so that, in effect, they would be segments of and, in total, the time and educational equivalent of the longer courses. These segments might be taken at different times, but would ultimately lead the student to the same objective. With the exception of the courses in general medicine, all short courses should fit in with a scheme, the ultimate aim of which would be a complete and satisfactory training in the specialty for which the graduate school provides instruction. Any institution offering work in any specialty, therefore, should provide (*a*) review courses in anatomy, pathology and the other basic preclinical sciences which apply to the respective specialties; (*b*) clinics in which students can have the opportunity personally to examine patients in hospital wards and outpatient departments and in which various therapeutic and operative procedures can be demonstrated; (*c*) courses of operative and laboratory technic; and (*d*)—to be assigned only when the student's previous training will warrant—assistantships in which, under the supervision of a physician who is recognized as an expert in the particular specialty, he can gradually assume responsibility in the diagnosis and therapeutic or operative treatment of the sick. Opportunity should be provided also for research work in the chosen specialty bearing on both the fundamental sciences and clinical fields. With courses so graded, no student should be admitted to any advanced short course unless, on careful investigation, he is found to possess the knowledge and skill, such as are obtainable in the other prerequisite courses.

5. *Teachers.*—The graduate medical school should be supplied with a corps of teachers well trained in and responsible for the work in all subjects in which opportunities for study are announced. This should include teachers for essential review or advanced work in the preclinical sciences, as well as those who have in charge work in clinical subjects. The teaching staff should be made up of graduates of or teachers in Class A medical colleges or other high grade educational institutions. The faculty should be organized under the various teaching departments in which work is offered, and a competent teacher should be at the head of each department.

6. *Laboratories.*—The school should possess well-equipped both laboratory and clinical subjects essential for the specialty or specialties in which opportunities are offered. There should also be an adequate supply of special apparatus, such as stereopticons, balopticons, photomicrographic outfits and roentgen-ray equipment.

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[1] The several fields of clinical specialization which are referred to are shown in the following list. Following completion of an internship in a general hospital, the minimum years designated after each subject represent what were considered as essential to insure efficiency in the various specialties by the Committees on Graduate Medical Instruction in their reports which were presented at the Annual Conference on Medical Education, held in Chicago, March 7, 1921:

Field	Years Essential	Field	Years Essential
(a) Surgery, General	3	(g) Internal Medicine	3
(b) Surgery, Orthopedic	3	(h) Pediatrics	3
(c) Surgery, Genito-Urinary	3	(i) Neuropsychiatry	3
(d) Gynecol. and Obstet	3	(j) Dermatology	2
(e) Ophthalmology	2	(k) Public Health and Hygiene	2
(f) Otolaryngology	2		

7. *Library and Museum Facilities.*—The graduate school should have a medical library which should include an ample supply of modern text and reference books, files of bound medical periodicals, and the essential indexes. It should also receive regularly thirty or more standard medical periodicals, the latest numbers of which should be on tables or in racks where they are easily accessible to the graduate students. The school should be supplied also with adequate museum facilities, including anatomic and pathologic specimens.

8. *Hospitals and Dispensaries.*—The graduate medical school should have a teaching hospital with a daily average of 200 or more patients, and an outpatient clinic with an average of 100 or more patients each day; or, if teaching is limited to a single specialty, a hospital of not less than twenty-five patients daily, and an outpatient clinic of at least fifty patients daily. In brief, it should have sufficient clinical material to enable it to provide satisfactory clinical study in the specialty or specialties for which opportunities are offered. In connection with the courses for general practitioners, ample clinical material should be available so that the student may be given the opportunity personally to examine patients in hospital wards and in the outpatient department, and to make the essential laboratory examinations.

9. *Annual Announcements.*—The graduate school should publish annually announcements, bulletins or catalogues giving detailed information in regard to its teachers, laboratories, dispensaries and hospitals; outlines of the various opportunities for study offered in both fundamental and clinical branches; a complete list of the students enrolled during the last preceding year, showing their medical schools and years of graduation, the subjects for which they registered and the time spent in each, and a list of those to whom advanced degrees or diploma-like certificates were granted.

10. *Advanced Degrees, Diplomas, Certificates.*—No advanced degree or diploma-like certificate should be granted to any one who is not known to be proficient in the specialty pursued; nor to any one, under any circumstances, who has not completed at least one academic year in full-time study of a single special subject in the institution granting the certificate; and unless scholarship records of the student show that, throughout the period, he has faithfully attended to his work, and unless reasonable tests show that he has diligently and satisfactorily completed the work for which he was registered.

APPROVED GRADUATE MEDICAL SCHOOLS

Revised to Aug. 21, 1926

Albany Medical College, Albany, N. Y.—Courses in Infectious Diseases and Public Health. Dr. Chas. C. Duryee, Director.

Baylor University College of Medicine, Dallas, Texas.—Summer Courses for General Practitioners. Dr. W. H. Moursund, Dean.

Chicago Policlinic, North Clark and Oak St.—Courses in Venereology, Urology and Dermatology. Dr. M. L. Harris, Secretary.

Colorado School of Tuberculosis, Colorado Springs, Colorado.—Dr. G. Burton Gilbert, Secretary, 402 Burns Bldg., Colorado Springs.

Columbia University College of Physicians and Surgeons, New York.—Higher Degree and General Practice Courses. Special Summer Course in Public Health (U. S. P. H. S.). Dr. William Darrach, Dean.

Cornell University Medical College, New York.—Higher Degree and General Practice Courses. Dr. Walter L. Niles, Dean.

Detroit College of Medicine and Surgery, Detroit, Mich.—Course in Public Health. Dr. I. Werness, Registrar.

Harvard Medical School, Courses for Graduates, Boston.—Basic Review and General Practice Courses. Dr. Samuel R. Meaker, Dean.

Herman Knapp Memorial Eye Hospital, School of Ophthalmology, 500 W. 57th St., New York City.—Courses in Diseases of the Eye. Dr. Gerald H. Grout, Secretary.

Howard University School of Medicine, Washington, D. C.—Courses for General Practitioners. Dr. Edward A. Balloch, Dean.

Indiana University School of Medicine, Indianapolis.—Higher Degree Courses. Dr. Charles P. Emerson, Dean.

Johns Hopkins Medical School, Baltimore.—School of Public Health. Dr. William H. Welch, Director.

Massachusetts Institute of Technology, Cambridge.—Higher Degrees in Public Health. Dr. Henry Paul Talbot, Dean.

Neurological Institute, 149 E. 67th St., New York City.—Clinical Clerkships. Dr. E. G. Zabriskie, Secretary, Medical Board.

New Haven School of Physiotherapy, 303 Whitney Ave., New Haven, Conn.—Dr. Harry Eaton Stewart, Director.

New York Eye and Ear Infirmary, School of Ophthalmology and Otology, 13th St., Corner Second Ave., New York City.—Courses in Ophthalmology and Otology. Mr. Webb W. Weeks, Secretary.

New York Polyclinic Medical School and Hospital, 341 to 351 West 50th St., New York City.—Courses for general practitioners. Dr. J. A. Kearney, Executive Officer.

New York Post-Graduate Medical School and Hospital, Second Avenue and Twentieth St., New York City.—Special Internships and General Practice Courses. Dr. William D. Cutter, Dean.

Ohio State University College of Medicine, Columbus.—Course in Public Health. Dr. E. R. Hayhurst, Head of Dept. of Public Health.

Physiatric Institute, Morristown, New Jersey.—Diabetes and Other Metabolic Diseases. Dr. Frederick M. Allen, Director.

Robert Dawson Evans Department of Clinical Research and Preventive Medicine (Boston University School of Medicine), 80 E. Concord St., Boston.—Courses in Endocrinology. Dr. Allan Winter Rowe, Chief of Research Service.

Stanford University School of Medicine, San Francisco.—Summer Courses for Graduates and Residencies in Medicine and Otolaryngology. Dr. William Ophuls, Dean.

State University of Iowa College of Medicine, Iowa City.—Summer Courses in Public Health (U. S. P. H. S.). Dr. Lee Wallace Dean, Dean.

Trudeau School of Tuberculosis, Saranac Lake, New York.—Courses for General Practitioners. Dr. E. R. Baldwin, Director.

Tulane University Graduate School of Medicine (New Orleans Polyclinic), New Orleans.—Higher Degrees, Fellowships and General Practice Courses. Dr. Edmund D. Martin, Dean.

University of Buffalo School of Medicine, Buffalo. N. Y.—Summer Courses for General Practitioners. Dr. C. Sumner Jones, Dean.

University and Bellevue Hospital Medical College, New York City.—Special Courses in Surgery. Dr. John Wyckoff, Secretary.

University of California Graduate Division, Berkeley-San Francisco.—Higher Degree and Public Health Courses (U. S. P. H. S.). Dr. Charles B. Lipman, Dean.

University of Chicago, Rush Medical College, Wood and Harrison Sts., Chicago.—Special and Higher Degree Courses and Residencies. Courses in Otolaryngology are now offered and others are being organized. Dr. Ernest E. Irons, Dean.

University of Cincinnati College of Medicine, Cincinnati.—Fellowships in Surgery. Dr. Fredk. C. Hicks, President.

University of Colorado School of Medicine, Denver.—Course in Ophthalmology. Dr. Maurice H. Rees, Dean.

University of Georgia Medical Department, Augusta.—Courses in Public Health. Dr. William H. Goodrich, Dean.

University of Illinois College of Medicine, Chicago.—Higher Degree Courses. Dr. David John Davis, Dean.

University of Michigan Medical School, Ann Arbor.—Summer Courses in Public Health (U. S. P. H. S.). Dr. Hugh Cabot, Dean.

University of Minnesota Graduate School of Medicine, Minneapolis-Rochester.—Higher Degree Fellowships and General Practice Courses. Dr. Guy Stanton Ford, Dean.

University of Pennsylvania Graduate School of Medicine, Philadelphia.—Higher Degree and General Practice Courses. Dr. George H. Meeker, Dean.

University of Porto Rico School of Tropical Medicine, San Juan, Porto Rico.—(Under the auspices of Columbia University. Dr. William Darrach, Dean.)

University of Texas School of Medicine, Galveston.—Summer Courses for General Practitioners. Dr. William Keiller, Dean.

University of Wisconsin Medical School, Madison.—Course in Public Health. Miss G. K. McRae, Secretary.

Washington University School of Medicine, St. Louis.—Courses in Otolaryngology, Pediatrics, Infant Feeding, Obstetrics and Diseases of the Heart. Dr. McKim Marriott, Dean.

Yale University School of Medicine, New Haven, Conn.—Residencies and General Practice Courses. Dr. Milton C. Winternitz, Dean.

Bath.—Royal United Hospital.—Course of six clinical demonstrations given each autumn on Saturday afternoons. R. G. Gordon, Hon. Sec., Postgraduate Committee, 9, The Circus, Bath, England.

Berlin.—University of Berlin Medical Faculty, Berlin, Germany.—Courses in Diseases of the Digestive Tract, Syphilis and Advanced Courses in Specialties. Further information and detailed prospectus may be secured by applying to the "Geschaftsstelle," Berlin, N. W. 6., Luisenplatz, 2-4-Kaiserin Friedrich-Haus.

Birmingham.—University of Birmingham.—Clinical demonstrations on medical and surgical cases, skin diseases, ophthalmic cases, children's diseases, etc., given at the General Hospital and at Queen's Hospital. Ten lectures in morbid psychology from April to July. Address W. F. Haslam, Esq., M.B., F.R.C.S., The University, Edmund Street, Birmingham, England.

Bordeaux.—University of Bordeaux, France.—Special Courses in Otorhinolaryngological Surgery, Bronchoscopy, Plastic, Mastoid and Neck Surgery. For information apply to Dr. Leon Felderman, 4428 York Rd., Philadelphia, Pa.

Bristol.—University of Bristol.—Clinical assistantships in all branches of hospital practice. Write to the Director of Postgraduate Studies (Clinical Section), Pathological Dept., University of Bristol, England.

Cambridge.—Addenbrooke's Hospital.—Operations and demonstrations in the clinical or biochemistry laboratories held every alternate autumn. Write Dr. J. Aldren Wright, 54 Trumpington Street, Cambridge, England.

Glasgow.—University of Glasgow.—Postgraduate courses. Summer months (June to October). (1) General Medical and Surgical Course. (2) Special Clinical Courses and (3) Clinical Assistantships. Winter months demonstrations in Medicine, Surgery, Obstetrics and Ophthalmology. Address the Secretary, Glasgow Postgraduate Medical Association, The University, Glasgow, Scotland.

London.—Hospital for Sick Children, Great Ormond St., London, W. C. 1, England.—Special Graduate Course in Pediatrics. Address, Oswald L. Addison, Dean, Medical School.

London.—London School of Hygiene and Tropical Medicine (University of London), 23 Endsleigh Gardens, Euston Rd., London, N. W. 1. For Prospectus and Calendar apply to the Secretary.

London.—National Hospital for the Paralysed and Epileptic, Queen Square, Bloomsbury, W. C. 1, England.—Special Courses and Lectures on the Nervous System. Dr. J. G. Greenfield, Dean, Medical School.

London.—North-East London Post Graduate College (Prince of Wales General Hospital, Tottenham, N. 15).—Special clinical demonstration in the wards; lecture hall, out-patient departments and affiliated hospitals. Special intensive courses of two week's duration are held at intervals throughout the year. Address the Dean.

London.—University of London, University Extension Dept., London, England.—Course of Lectures on Medical Hydrology. Dr. Halburt J. Waring, Dean.

London.—The Fellowship of Medicine and Post Graduate Medical Association, 1, Wimpole St., London, W. 1, with which are associated some forty General and Special Hospitals in London, is prepared to offer Fellowships and Courses for General Practitioners. Full information may be obtained on application to Dr. Arthur J. Whiting, Honorary Secretary.

London.—West London Post Graduate College, Hammersmith Broadway, W. 6.—Clinical clerkships for graduate physicians obtainable in the various departments. Address the Dean.

Manchester.—Royal Infirmary.—Lectures and demonstrations on medical, surgical and special subjects given each autumn and spring. Write to E. Bosdin Leech, M.D., 16 St. John Street, Manchester, England.

Paris. — International Clinics of Oto-Rhino-Laryngology and Facio-Maxillary Surgery, St. Louis Hospital, Paris, France. — Courses in Oto-Rhino-Laryngology and Surgery. Applications or inquiries may be addressed to Dr. J. Eastman Sheehan, 636 Fifth Ave., New York.

St. Andrews.—James MacKenzie Institute for Clinical Research, St. Andrews, Scotland.—Courses for General Practitioners. For further information write to Dr. J. Hunter Paton, Secretary.

Sheffield.—University of Sheffield.—Lectures and demonstrations on general and special subjects given each year. Work mainly clinical and practical. Write to the Hon. Secretary, Committee of Clinical Studies, University, Sheffield, England.

HOSPITALS PROVIDING APPROVED RESIDENCIES IN CERTAIN SPECIALTIES

Barnes Hospital, 600 S. Kingshighway, St. Louis.—Residencies in the specialties, Internal Medicine, Obstetrics, Surgery and Gynecology. Dr. L. H. Burlingham, Med. Supt.

Bloomingdale Hospital for Mental Diseases, White Plains, New York.—Courses in Psychiatry. Dr. W. L. Russell, Med. Dir.

Boston Psychopathic Hospital, 74 Fenwood Rd., Boston 17, Mass.—Residencies in Neurology and Psychiatry. Dr. Karl M. Bowman, Chief Medical Officer.

Children's Hospital, 4616 Sunset Blvd., Los Angeles, Calif.—Residencies in Pediatrics. Miss Lilla V. Swift, R.N., Supt.

Children's Hospital, 13th and W Sts., N. W., Washington, D. C.—Residencies in Pediatrics. Miss Mattie M. Gibson, R.N., Supt.

Children's Hospital of Michigan, 5224 St. Antoine Street, Detroit.—Residencies in Pediatrics. Miss Margaret A. Rogers, R.N., Supt.

Children's Hospital, 18th and Bainbridge Sts., Philadelphia, Pa.—Residencies in Pediatrics. Miss Susan C. Francis, Supt.

Children's Memorial Hospital, 735 Fullerton Ave., Chicago.—Special Courses in Infant Feeding, Pediatrics and Otolaryngology. Joseph Brennemann, Chief of Staff.

Colorado Psychopathic Hospital, 4200 E. Ninth Ave., Denver.—Residencies in Neuropsychiatry. Dr. Franklin E. Ebaugh, Director.

Cook County Hospital, Harrison and Wood Sts., Chicago.—Residencies in Eye, Ear, Nose and Throat, Contagious, Skin and Venereal Diseases, Obstetrics, Medicine, Pediatrics, Surgery, (a) Fracture, (b) Oral. Mr. Michael Zimmer, Warden.

Elizabeth Steel Magee Hospital, Forbes and Halket Sts., Pittsburgh, Pa.—Residencies in Obstetrics and Gynecology. Miss Jesse J. Turnbull, R.N., Supt.

Fitzsimons General Hospital, Denver, Colo. Special Residencies in Tuberculosis. Address Commanding Officer.

Grace Hospital, 4160 John R. St. and Willis Ave., E., Detroit, Mich. —Residencies in General Surgery, Internal Medicine, Obstetrics and Gynecology. Dr. W. L. Babcock, Director.

Harlem Eye and Ear Hospital, 127th St. and Lexington Ave., New York City.—Residencies in Eye, Ear, Nose and Throat. Dr. Charles B. Meding, Med. Dir.

Hospital for Joint Diseases, Madison Ave. from 123d to 124th Sts., New York City.—Residencies in Orthopedic Surgery, and Physical Therapy. Dr. Henry W. Frauenthal, Medical Director.

Illinois Eye and Ear Infirmary, 904 W. Adams St., Chicago.—Residencies in Ophthalmology and Otology. Dr. Leo Steiner, Managing Officer.

James Whitcomb Riley Hospital for Children, Indianapolis, Ind.—Residencies in Pediatrics. Dr. Robert E. Neff, Administrator.

Jefferson Clinic and Diagnostic Hospital, 2201 Jefferson Ave., E., Detroit, Mich.—Special Residencies in General Surgery. Mr. Carl I. Johnson, Supt.

Johns Hopkins Hospital, Baltimore.—Residencies in the specialties. Dr. Winford H. Smith, Director.

Lakeside Hospital, 1235 Lakeside Ave., Cleveland, Ohio.—Residencies in Surgery. Dr. A. B. Denison, Med. Dir.

Louisville City Hospital, Preston and Chestnut Sts., Louisville, Ky.—Residencies in Medicine, Surgery, Pathology and Pediatrics. Ernest Shouse, Supt.

Manhattan Eye, Ear and Throat Hospital, 210 E. 64th St., New York City.—Special Internships in Eye and in Ear, Nose and Throat. Mr. Reuben O'Brien, Supt.

Manhattan Maternity and Dispensary, 327 E. 60th St., New York City.—Special Residencies in Obstetrics. Miss Agnes Martin, R.N., Supt.

Massachusetts Eye and Ear Infirmary, 243 Charles St., Cor. Fruit St., Boston.—Special Internships in Eye, and in Ear, Nose and Throat. Dr. Frederic A. Washburn, Med. Dir.

Memorial Hospital for the Treatment of Cancer and Allied Diseases, 106th St. and Central Park West, New York City.—Residencies in Cancer. Mr. George F. Holmes, Supt.

Milwaukee Children's Hospital, 219—10th St., Milwaukee, Wis.—Special Residencies in Pediatrics. Miss B. M. Henderson, R.N., Supt.

Minneapolis General Hospital, 6th Avenue and 5th Street, Minneapolis, Minn.—Residencies in Medicine, Surgery, Pediatrics, Obstetrics and in Eye, Ear, Nose and Throat. Dr. Walter E. List, Med. Supt.

Misericordia Hospital, 2224 Chestnut St., Milwaukee, Wis.—Special Residencies in Obstetrics. Sister St. Estelle, Supt.

Montefiore Hospital, Gun Hill Road near Jerome Ave., New York City.—Special Residencies in Medicine, Neurology, Tuberculosis and Orthopedic Surgery. Dr. Ernst P. Boas, Med. Dir.

Mount Sinai Hospital, Fifth Ave. and 100th St., New York City.—Courses in Internal Medicine and Pediatrics, Surgery, Gynecology and Dietetics, Dermatology, Neurology, Psychiatry, Ophthalmology, Otology and Surgical Pathology. Write to the Secretary for Medical Instruction, 1 E. 100th St.

National Jewish Hospital, 3800 E. Colfax Ave., Denver, Colo.—Residencies in Tuberculosis. Dr. Felix Baum, Med. Dir.

New Haven Hospital, 330 Cedar St., New Haven, Conn.—Special Residencies in Gynecology, Medicine and Obstetrics. Mr. Albert W. Buck, Supt.

New York Eye and Ear Infirmary, Second Ave., Corner 13th St., New York City.—Special Residencies in Ophthalmology and Otology. Mr. Thomas K. Robertson, Supt.

New York Orthopedic Dispensary and Hospital, 430 East 59th St., New York City.—Residencies in Orthopedic Surgery. Miss Theodora S. Root, Supt.

New York Post-Graduate Hospital, Second Avenue and Twentieth St., New York City.—Special Internships and General Practice Courses. Dr. William D. Cutter, Dean.

New York Skin and Cancer Hospital, 2nd Ave. and 19th St., New York City.—Courses for General Practitioners. Miss Sara Burns, R.N., Supt.

New York Society for the Relief of the Ruptured and Crippled, 321 East 42nd St., New York City.—Special Courses in Orthopedic Surgery. Dr. Joseph D. Flick, Supt.

Pennsylvania Hospital, 4401 Market St., Philadelphia.—Courses in Neurology and Psychiatry. Dr. Earl D. Bond, Physician in Chief.

Peter Bent Brigham Hospital, 721 Huntington Ave., Boston.—Special Courses in Medicine, Surgery, Pathology and Roentgenology. Dr. J. B. Howland, Med. Supt.

Presbyterian Hospital, San Juan, Porto Rico.—Courses in Tropical Medicine. Dr. Garry R. Burke, Assoc. Med. Director.

Providence City Hospital, Eaton St., Providence, Rhode Island.—Courses in Contagious Diseases. Dr. D. L. Richardson, Med. Supt.

Southern Pacific Hospital, Bishop and Thomas Sts., Houston, Texas. —Residencies in Surgery. Dr. H. K. Morrison, House Surgeon.

South View Hospital, 18th Ave and Mitchell St., Milwaukee, Wis.—Courses in Contagious Diseases. Dr. M. R. French, Med. Supt.

State Hospital for Mental Diseases, Howard, Rhode Island.—Courses in Neurology. Dr. Arthur H. Harrington, Med. Supt.

St. Elizabeth's Hospital, Claremont and LeMoyne Sts., Chicago.—Summer Courses in Clinical Medicine. Sister M. Cordula, Supt.

St. Francis Hospital, Bush and Hyde Sts., San Francisco, Calif.—Residencies in General Practice. Dr. L. B. Rogers, Managing Director.

St. Louis Children's Hospital, 500 S. Kingshighway, St. Louis.—Residencies in Pediatrics. Dr. L. H. Burlingham, Med. Supt.

St. Mary's, Colonial, Kahler, Worrell and Damon Hospitals, Rochester, Minn.—Services in these hospitals form part of the Fellowships in the University of Minnesota Graduate Medical School. *See list* of Approved Graduate Medical Schools.

University Hospital (University of Minnesota), Church and Union Sts., S. E., Minneapolis.—Residencies in Medicine, Surgery, Pediatrics, Obstetrics, and in Eye, Ear, Nose and Throat. Dr. L. B. Baldwin, Med. Supt.

Wills Hospital, Philadelphia.—Residencies, 16 Months, in Ophthalmology. Mr. Stephen Wierzbicki, Supt.

Graduate Courses in Medical Subjects and Residencies in Specialties

Where These Courses May Be Obtained

Anatomy

- Cornell University Medical College.
- Harvard Medical School.
- Indiana University School of Medicine.
- James MacKenzie Institute for Clinical Research, Scotland.
- Tulane University Graduate School of Medicine (Fellowships, Review and Short Courses).
- University of California Graduate Division, Berkeley (for advanced students).
- University of Illinois College of Medicine.
- University of Minnesota Graduate School of Medicine.
- University of Pennsylvania Graduate School of Medicine.
- Yale University School of Medicine.

Anesthesia

- Harvard Medical School.
- New York Polyclinic Medical School and Hospital.
- New York Post-Graduate Medical School.
- University and Bellevue Hospital Medical College.
- University of California Graduate Division, Berkeley.
- University of Pennsylvania Graduate School of Medicine.

Bacteriology
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Indiana University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Illinois College of Medicine.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Biochemistry
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Indiana University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
New York Post-Graduate Medical School.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Illinois College of Medicine.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Bronchoscopy
Columbia University College of Physicians and Surgeons.
University of Pennsylvania Graduate School of Medicine.

Cancer
Memorial Hospital, New York City (Residencies).
New York Skin and Cancer Hospital.

Cardiology
Harvard Medical School.
University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.
Yale University School of Medicine.

Contagious Diseases
Cook County Hospital, Chicago (Residencies).
Providence City Hospital, Rhode Island (Residencies).
South View Municipal Hospital, Milwaukee.
University of California Graduate Division, Berkeley (Residencies).
Yale University School of Medicine.

Dental Surgery
Mayo Foundation, Rochester, Minn. (Fellowships).

Dermatology
Chicago Policlinic.
Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Cornell University Medical College.
Harvard Medical School.
Johns Hopkins Hospital (Residencies).
Mount Sinai Hospital, New York City (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
New York Skin and Cancer Hospital.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.

Diabetes
Columbia University, College of Physicians and Surgeons.
Harvard Medical School.
Physiatric Institute, Morristown, N. J.
University of Pennsylvania Graduate School of Medicine.

Diagnosis (Laboratory and Physical)
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
Herman Knapp Memorial Hospital, New York City.
Howard University School of Medicine.
New York Post-Graduate Medical School and Hospital.
Tulane University Graduate School of Medicine.
University of Minnesota Graduate School of Medicine.
Washington University School of Medicine.

Dietetics
Mount Sinai Hospital, New York.

Electro-Therapeutics
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
University of Pennsylvania Graduate School of Medicine.

Electrocardiography—(See Cardiology)

Endocrinology
Robert Dawson Evans Dept. of Clinical Research and Preventive Medicine (Boston University School of Medicine).

Gastro-Enterology
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
New York Polyclinic Medical School and Hospital.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.

General Practice
St. Francis Hospital, San Francisco (Residencies).

Genito-Urinary—(See Urology)

Gynecology
Barnes Hospital, St. Louis (Residencies).
Columbia University College of Physicians and Surgeons.
Elizabeth Steel Magee Hospital, Pittsburgh (Residencies).
Grace Hospital, Detroit (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Johns Hopkins Hospital (Residencies).
Mount Sinai Hospital, New York (Residencies).
New Haven Hospital (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division (Residencies).
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.

Hygiene—(See Public Health)

Immunology
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Industrial Medicine
Detroit College of Medicine and Surgery.
Ohio State University College of Medicine.
University of California, Graduate Division, Berkeley.
Yale University School of Medicine.

Infant Feeding
Children's Memorial Hospital, Chicago.
Columbia University College of Physicians and Surgeons.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

Insulin Treatment—(See Diabetes)

Internal Medicine—(See Medicine)

Intubation
University of Pennsylvania Graduate School of Medicine.

Laryngology and Rhinology
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
International Clinic of Oto-Rhino-Laryngology and Surgery (St. Louis Hospital, Paris, France).
Manhattan Eye, Ear and Throat Hospital.
Massachusetts Eye and Ear Infirmary (Residencies).
Minneapolis General Hospital (Residencies).
Mount Sinai Hospital, New York.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University Hospital, Minneapolis (Residencies).
University of Berlin Medical Faculty.
University of Bordeaux, France.
University of Chicago, Rush Medical College.
University of Minnesota Graduate School of Medicine (Fellowships).
Washington University School of Medicine.

Medical Hydrology
University of London, England.

Medicine
Barnes Hospital, St. Louis (Residencies)
Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Cornell University Medical College.
Grace Hospital, Detroit (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Indiana University School of Medicine.
Johns Hopkins Hospital (Residencies).
Louisville City Hospital, Kentucky (Residencies).
Minneapolis General Hospital (Residencies).
Montefiore Hospital, New York City (Residencies).
Mount Sinai Hospital, New York (Residencies).
New Haven Hospital (Residencies.)
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Peter Bent Brigham Hospital, Boston (Residencies).
St. Elizabeth's Hospital, Chicago (Clinical Medicine).
Stanford University School of Medicine (Graduate Courses and Residencies).
Tulane University Graduate School of Medicine.
University Hospital, Minneapolis (Residencies).
University of Berlin Medical Faculty.
University of California Graduate Division, Berkeley (Residencies).
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Medico-Military Science and Tactics
University of California Graduate Division, Berkeley.

Metabolic Diseases

Columbia University College of Physicians and Surgeons.
Harvard Medical School.
Physiatric Institute, Morristown, N. J.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine (Short course).
University of Berlin Medical Faculty.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine.
Yale University School of Medicine.

Nephritis

Columbia University College of Physicians and Surgeons.
Harvard Medical School.
Physiatric Institute, Morristown, N. J.
Yale University School of Medicine.

Neurology and Psychiatry

Bloomingdale Hospital for Mental Diseases, White Plains, N. Y.
Boston Psychopathic Hospital (Residencies).
Colorado Psychopathic Hospital (Residences).
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Johns Hopkins Hospital (Residencies).
Montefiore Hospital, New York City (Residencies).
Mount Sinai Hospital, New York.
National Hospital for the Paralysed and Epileptic, W. C. 1, London.
Neurological Institute, New York City.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Pennsylvania Hospital, Philadelphia (Residencies).
Stanford University School of Medicine.
State Hospital for Mental Diseases, Howard, R. I.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.

Obstetrics

Barnes Hospital, St. Louis (Residencies)
Cook County Hospital, Chicago (Residencies).
Elizabeth Steel Magee Hospital, Pittsburgh (Residencies).
Grace Hospital, Detroit (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Johns Hopkins Hospital (Residencies).
Manhattan Maternity and Dispensary, New York City (Residencies).
Minneapolis General Hospital (Residencies).
Misericordia Hospital, Milwaukee (Residencies).
New Haven Hospital (Residencies).
New York Polyclinic Medical School and Hospital.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine (Fellowships, Review and Short Courses).
University Hospital, Minneapolis [illegible]
University of California Graduate [illegible]
University of Minnesota Graduate [illegible]
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

Ophthalmology

Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Cornell University Medical College.
Harlem Eye and Ear Hospital (Residencies).
Harvard Medical School.
Herman Knapp Memorial Eye Hospital.
Illinois Eye and Ear Infirmary *(Residencies)*.
Indiana University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
Manhattan Eye, Ear and Throat Hospital.
Massachusetts Eye and Ear Infirmary (Residencies).
Minneapolis General Hospital (Residencies).
Mount Sinai Hospital, New York.
New York Eye and Ear Infirmary (Short Courses and Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University Hospital, Minneapolis (Residencies).
University of California Graduate Division, Berkeley.
University of Colorado School of Medicine.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.
Wills Hospital, Philadelphia (Residencies).

Orthopedic Surgery

Harvard Medical School.
Hospital for Joint Diseases, New York City *(Residencies)*.
Montefiore Hospital, New York City *(Residencies)*.
New York Orthopedic Dispensary and Hospital (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
New York Society for the Relief of the Ruptured and Crippled, New York City (Residencies).
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Otolaryngology

Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Harlem Eye and Ear Hospital (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Indiana University School of Medicine.
International Clinic of Oto-Rhino-Laryngology and Surgery (St. Louis Hospital, Paris).
Johns Hopkins Hospital, Baltimore (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine (Graduate Courses and Residencies).
Tulane University Graduate School of Medicine.
University of Berlin Medical Faculty.
University of Bordeaux, France.
University of Chicago, Rush Medical College.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

Otology

Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Harlem Eye and Ear Hospital (Residencies).
Harvard Medical School.
Illinois Eye and Ear Infirmary (Residencies).
Manhattan Eye, Ear and Throat Hospital.
Massachusetts Eye and Ear Infirmary (Residencies).
Minneapolis General Hospital (Residencies).
Mount Sinai Hospital, New York.
New York Eye and Ear Infirmary (Short Courses and Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University Hospital, Minneapolis (Residencies).
University of California Graduate Division, Berkeley.
University of Colorado School of Medicine.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

Parasitology and Tropical Medicine

University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.

Pathology

Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Indiana University School of Medicine.
Louisville City Hospital, Kentucky (Residencies).
Mount Sinai Hospital, New York City.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Peter Bent Brigham Hospital, Boston.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine (Fellowships).
University of California Graduate Division, Berkeley (for advanced students).
University of Illinois College of Medicine.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Pediatrics

Children's Hospital, Los Angeles (Residencies).
Children's Hospital, Washington, D. C. (Residencies).
Children's Hospital of Michigan (Residencies).
Children's Hospital, [illegible] (Residencies).
Children's *Memorial* [illegible]
Columbia University [illegible], and Surgeons.
Cook County Hospital, Chicago (Residencies).
Harvard Medical School.
Hospital for Sick Children, London, England.
James Whitcomb Riley Hospital for Children, Indianapolis (Residencies).
Johns Hopkins Hospital, Baltimore (Residencies).
Louisville City Hospital, Kentucky (Residencies).
Milwaukee Children's Hospital (Residencies).
Minneapolis General Hospital (Residencies).
Mount Sinai Hospital, New York City.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
St. Louis Children's Hospital (Residencies).
Tulane University Graduate School of Medicine (Fellowships).
University Hospital, Minneapolis (Residencies).
University of California Graduate Division (Residencies).
University of Minnesota Graduate School of Medicine (Fellowships)
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.
Yale University School of Medicine (Research).

Pharmacology

Cornell University Medical College.
Harvard Medical School.
Stanford University School of Medicine.
University of California Graduate Division, Berkeley.
University of Illinois College of Medicine.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Physiology
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Indiana University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
Tulane University Graduate School of Medicine.
University of California Graduate Division.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Physical Therapy
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
Hospital for Joint Diseases, New York City (Residencies).
New Haven School of Physiotherapy.
Stanford University School of Medicine.

Preventive Medicine (See Public Health)

Proctology
Harvard Medical School.
New York Polyclinic Medical School and Hospital.
Tulane University Graduate School of Medicine.

Public Health, Hygiene and Preventive Medicine
Albany Medical College.
Columbia University College of Physicians and Surgeons.
Detroit College of Medicine and Surgery.
Harvard Medical School.
Howard University School of Medicine.
Johns Hopkins Medical School, Baltimore.
Massachusetts Institute of Technology.
Ohio State University College of Medicine.
State University of Iowa College of Medicine.
University of California Graduate Division, Berkeley.
University of Georgia Medical Department.
University of Michigan Medical School.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
University of Wisconsin Medical School, Madison.
Yale University School of Medicine, New Haven.

Radiology
Harvard Medical School.
Howard University School of Medicine.
James MacKenzie Institute for Clinical Research, Scotland.
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
New York Skin and Cancer Hospital.
Peter Bent Brigham Hospital, Boston.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Refraction
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Harvard Medical School.
Herman Knapp Memorial Eye Hospital.
Manhattan Eye, Ear and Throat Hospital.
Massachusetts Eye and Ear Infirmary.
New York Eye and Ear Infirmary.
New York Post-Graduate Medical School.
Tulane University Graduate School of Medicine.
University of Colorado School of Medicine.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Washington University School of Medicine.

Research Medicine
University of California Graduate Division (for advanced students).

Rhinology—(See Otolaryngology)

Roentgenology—(See Radiology)

Surgery (Surgical Anatomy, Surgical Diagnosis, Operative Surgery)
Barnes Hospital, St. Louis (Residencies).
Columbia University College of Physicians and Surgeons.
Cook County Hospital, Chicago (Residencies).
Cornell University Medical College.
Grace Hospital, Detroit (Residencies).
Harvard Medical School.
Howard University School of Medicine.
Indiana University School of Medicine.
International Clinic of Oto-Rhino-Laryngology and Surgery (St. Louis Hospital, Paris, France).
Jefferson Clinic and Diagnostic Hospital (Residencies).
Johns Hopkins Hospital (Residencies).
Lakeside Hospital, Cleveland, Ohio (Residencies).
Louisville City Hospital, Kentucky (Residencies).
Minneapolis General Hospital (Residencies).
Montefiore Hospital, New York City (Residencies).
Mount Sinai Hospital, New York City (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Peter Bent Brigham Hospital, Boston (Residencies).
Southern Pacific Hospital, Houston, Texas (Residencies).
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University and Bellevue Hospital Medical College.
University Hospital, Minneapolis (Residencies).
University of California Graduate Division (Residencies).
University of Cincinnati College of Medicine (Fellowships).
University of Minnesota Graduate School of Medicine (Fellowships).
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Surgery (Traumatic and Emergency)
New York Post-Graduate Medical School.

Syphilology
Columbia University College of Physicians and Surgeons.
Harvard Medical School.
New York Polyclinic Medical School and Hospital.
New York Skin and Cancer Hospital.
Stanford University School of Medicine.
University of Berlin Medical Faculty.
University of California Graduate Division, Berkeley.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Tropical Medicine
Columbia University College of Physicians and Surgeons.
London School of Hygiene and Tropical Medicine.
Presbyterian Hospital, San Juan, Porto Rico.
Tulane University Graduate School of Medicine.
University of Porto Rico, San Juan.

Tuberculosis
Colorado School of Tuberculosis.
Fitzsimons General Hospital, Denver (Residencies).
Montefiore Hospital, New York City (Residencies).
National Jewish Hospital, Denver (Residencies).
The Trudeau School of Tuberculosis, Saranac Lake, N. Y.
Tulane University Graduate School of Medicine (Short Course).
University of California Graduate Division (Residencies).
University of Pennsylvania Graduate School of Medicine.

Urology
Chicago Policlinic.
Harvard Medical School.
Howard University School of Medicine.
Johns Hopkins Hospital (Residencies).
New York Polyclinic Medical School and Hospital.
New York Post-Graduate Medical School.
Stanford University School of Medicine.
Tulane University Graduate School of Medicine.
University of California Graduate Division, Berkeley.
University of Minnesota Graduate School of Medicine.
University of Pennsylvania Graduate School of Medicine.
Yale University School of Medicine.

Venereology
Chicago Policlinic.

Future Additions to the Approved List

Other institutions which are offering higher degree opportunities in medical subjects, other hospitals with special residencies, and other graduate medical schools will be added to the list on application and after, on investigation, their educational standards and provisions for postgraduate education are found to comply with the principles governing graduate medical education.

Special hospitals, or general hospitals which also provide residencies or advanced internships in special departments, are invited to make application to be included in the list of hospitals providing approved residencies in certain specialties. This approval is extended to only those hospitals that require the completion of a general internship for admission to the residencies.

HOSPITAL INTERN YEAR

Required by Medical Colleges

Twelve medical colleges have adopted the requirements of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the years when the requirement became effective for matriculants and graduates are as follows:

	Affects Matriculants	Affects Graduates
University of Minnesota Medical School......	1910-11	1915
Stanford University School of Medicine......	1914-15	1919
Rush Medical College (University of Chicago).	1914-15	1919
University of California Medical School......	1914-15	1919
Marquette University School of Medicine.....	1915-16	1920
Northwestern University Medical School......	1915-16	1920
University of Illinois College of Medicine.....	1917-18	1922
Loyola University School of Medicine........	1917-18	1922
Detroit College of Medicine and Surgery.....	1919-20	1924
University of Nebraska College of Medicine...	1922-23	1926
University of Cincinnati College of Medicine..	1922-23	1926
College of Medical Evangelists...............	1922-23	1927

Required by Licensing Boards

The hospital intern year has been adopted as an essential qualification for the license to practice in twelve states, becoming effective in different years, as follows:

State Board of	Affects Student Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1913-14	1918
North Dakota	1913-14	1918
Washington	1914-15	1919
Illinois	1917-18	1922
Michigan	1917-18	1922
Iowa	1918-19	1923
Delaware	1919-20	1924
South Dakota	1920-21	1925
Utah	1921-22	1926

The requirements both by medical schools and by state boards are overwhelmingly if not unanimously for the rotation service in general hospitals.

Scholarships and Loan Fund

As evidence that provision is being made for worthy students, regardless of their financial status, 576 scholarships are reported this year in the following forty-six medical schools:

University of Alabama School of Medicine, Tuscaloosa	67
Stanford University Medical School,* San Francisco	2
University of California Medical School,* San Francisco	6
University of Colorado School of Medicine,* Denver	1
Yale University School of Medicine,* New Haven	2
Georgetown University School of Medicine, Washington	2
Emory University Medical School,* Atlanta	11
Northwestern University School of Medicine,* Chicago	1
Rush Medical College, Chicago	7
University of Illinois College of Medicine, Chicago	84
Indiana University School of Medicine,* Bloomington and Indianapolis	12
State University of Iowa College of Medicine, Iowa City	1
University of Kansas School of Medicine,* Kansas City	1
Johns Hopkins University School of Medicine, Baltimore	6
University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	8
Boston University School of Medicine,* Boston	16
Medical School of Harvard University,* Boston	50
Detroit College of Medicine and Surgery, Detroit	8
University of Missouri School of Medicine,* Columbia	10
Washington University School of Medicine, St. Louis	2
University of Nebraska College of Medicine,* Omaha	6
Dartmouth Medical School,* Hanover, N. H.	2
Albany Medical College, Albany, N. Y.	11
University of Buffalo Department of Medicine,* Buffalo	1
Columbia University College of Physicians and Surgeons,* New York	36
Cornell University Medical College,* New York	3
Syracuse University College of Medicine, Syracuse	1
University and Bellevue Hospital Medical College,* New York	1
University of North Carolina School of Medicine, Chapel Hill	1
University of Cincinnati College of Medicine,* Cincinnati	12
University of Oregon Department of Medicine,* Portland	5
Hahnemann Medical College and Hospital of Philadelphia*	12
Jefferson Medical College, Philadelphia	3
Temple University Department of Medicine, Philadelphia	3
University of Pennsylvania School of Medicine,* Philadelphia	12
University of Pittsburgh School of Medicine, Pittsburgh	3
Woman's Medical College of Pennsylvania,* Philadelphia	30
Medical College of the State of South Carolina, Charleston	8
University of Tennessee College of Medicine, Memphis	15
Vanderbilt University Medical Department, Nashville, Tenn.	4
University of Texas Department of Medicine,* Galveston	2
University of Vermont Medical School*	55
Medical College of Virginia, Richmond	10
University of Virginia Department of Medicine,* Charlottesville	3
West Virginia University School of Medicine,* Morgantown	1
University of Wisconsin Medical School, Madison	6
Total in 46 medical schools	543

* Have loan funds also.

Loan Funds

Besides the twenty-six colleges marked by an asterisk (*) in the above list which have loan funds for deserving but needy students, such funds are available also at the five following medical schools:

College of Medical Evangelists, Loma Linda, Calif.
Tulane University of Louisiana School of Medicine, New Orleans.
University of Michigan Medical School, Ann Arbor.
Wake Forest College School of Medicine, Wake Forest, N. C.
University of North Dakota School of Medicine, University.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work.

Curriculum: The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into *subjects*, *each division* to be allotted approximately the time, on a percentage basis, as shown in the following schedule:

1. Anatomy, including embryology and histology	14 –18½%
2. Physiology	4½– 6 %
3. Biochemistry	3½– 4½%
4. Pathology, bacteriology and immunology	10 –13 %
5. Pharmacology	4 – 5 %
6. Hygiene and sanitation	3 – 4 %
7. General medicine (neurology and psychiatry, pediatrics, dermatology and syphilis)	20 –26½%
8. General surgery (orthopedic surgery, urology, ophthalmology, otolaryngology, roentgenology)	13 –17½%
9. Obstetrics and gynecology	4 – 5 %
	76 – 100%
Electives	24 – 0 %

MEMBERS OF ASSOCIATION

University of Alabama School of Medicine.
College of Medical Evangelists.
Stanford University School of Medicine.
University of California Medical School.
McGill University Faculty of Medicine.
University of Toronto Faculty of Medicine.
University of Colorado School of Medicine.
Yale University School of Medicine.
Georgetown University School of Medicine.
George Washington University Medical School.
Howard University School of Medicine.
Army Medical School.
Navy Medical School.
Emory University School of Medicine.
University of Georgia Medical Department.
Loyola University School of Medicine.
Northwestern University Medical School.
Rush Medical College.
University of Illinois College of Medicine.
Indiana University School of Medicine.
State University of Iowa College of Medicine.
University of Kansas School of Medicine.
University of Louisville School of Medicine.
Tulane University of Louisiana School of Medicine.
Johns Hopkins University School of Medicine.
University of Maryland School of Medicine and College of Physicians and Surgeons.
Boston University School of Medicine.
Harvard University Medical School.
Tufts College Medical School.
Detroit College of Medicine and Surgery.
University of Michigan Medical School.
University of Minnesota Medical School.
University of Mississippi School of Medicine.
St. Louis University School of Medicine.
University of Missouri School of Medicine.
Washington University School of Medicine.
Creighton University School of Medicine.
University of Nebraska College of Medicine.
Albany Medical College.
Columbia University College of Physicians and Surgeons.
Cornell University Medical College.
Long Island College Hospital.
New York Post-Graduate Medical School and Hospital.
Syracuse University College of Medicine.
University and Bellevue Hospital Medical College.
University of Buffalo Medical Department.
University of North Carolina School of Medicine.
Wake Forest College School of Medicine.
University of North Dakota School of Medicine.
Ohio State University College of Medicine.
University of Cincinnati College of Medicine.
Western Reserve University School of Medicine.
University of Oklahoma School of Medicine.
University of Oregon Medical School.
Hahnemann Medical College and Hospital.
Jefferson Medical College.
University of Pennsylvania School of Medicine.
University of Pittsburgh School of Medicine.
Woman's Medical College of Pennsylvania.
University of the Philippines College of Medicine and Surgery.
Medical College of the State of South Carolina.
University of South Dakota College of Medicine.
Meharry Medical College.
University of Tennessee College of Medicine.
Vanderbilt University School of Medicine.
Baylor University College of Medicine.
University of Texas School of Medicine.
University of Vermont College of Medicine.
Medical College of Virginia.
University of Virginia Department of Medicine.
West Virginia University School of Medicine.
Marquette University School of Medicine.
University of Wisconsin Medical School.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 25 East Washington Street, Chicago.

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SATURDAY, AUGUST 21, 1926

MEDICAL EDUCATION IN THE UNITED STATES

For the twenty-sixth consecutive year, statistics dealing with medical education in the United States are here made available. The number of students enrolled during the last college session still shows an increase over that of the previous year, an increase which has been persistent since 1918. The number reported is 18,840, the largest enrolment since 1911. The number of students seeking admission to medical schools is still excessive, although, as we go to press, 236 [1] vacancies still exist in the acceptable medical schools. The Council on Medical Education and Hospitals has issued three separate bulletins calling the attention of all deans to these remaining vacancies, suggesting that well qualified students be referred to them.

The number of graduates this year was 3,962, a decrease of twelve since 1925. The total would have been 4,037, but two medical schools withheld degrees for a year pending completion of hospital internships. Of all these graduates, 3,732, or 94.2 per cent, were graduated from class A medical schools.

New and exceptionally well equipped medical schools are being organized to take the places of low grade institutions or diploma mills which are being closed. Last year the University of Rochester, N. Y., opened its new medical school, and the University of Wisconsin extended its medical course from two to four years. Plans are being considered for the medical department of the Duke University at Durham, N. C. With the closing of a diploma mill at Kansas City, the number of medical schools is again reduced to seventy-nine, the lowest number in this country since 1871. The seventy-nine medical colleges last year enrolled on the average 238 students each, as compared with 162 for each of the 122 colleges existing in 1911. Of the medical schools existing fifteen years ago, many enrolled less than fifty students in all four classes. This year, however, omitting the class C institutions, there was only one four year college which reported less than 100 students.

Fifteen years ago there were forty-three medical schools in which an inspector within a few minutes could note all the physical equipment which the college possessed. Only a small number of the others possessed abundant equipment. Fully a third of the medical schools now have groups of buildings more elaborate than were possessed by many liberal arts colleges and universities fifteen years ago.

BETTER USE OF CLINICAL FACILITIES

One of the chief advances in medical schools since the World War has been a great increase of hospital and dispensary facilities, and a more efficient use made of that material. Bedside instruction has been generally provided for students in small groups wherein each student is required to write histories, make physical examinations and, later, serve as a clinical clerk in the hospital. Such instruction has been made even more efficient through the careful supervision of the student's work by his instructors, and the correction of the students' errors, in the students' presence—a very effective part of their instruction.

PRESENT CHANGES NEEDED MOSTLY INTERNAL

The problems with which medical schools are now struggling are mainly internal. There is the ever present problem of the medical curriculum, which still needs revision so that only essential subjects may be retained and subjects that deal with the narrower fields of specialties may be listed for graduate students. With the rapid developments in medical schools during the last twenty years, the demand for teachers, particularly for those who would devote their entire time to such work, was greater than the supply. The need at present is not for greater numbers but for those who are better qualified.

GRADUATE MEDICAL SCHOOLS

The most positive need at this time is for more graduate medical schools, particularly those connected with well established universities, such as those in Minnesota and Pennsylvania. In universities having both undergraduate and graduate medical schools, the problem of the complex medical curriculum will be easier of solution, since a definite place is provided, either in the undergraduate or the graduate medical school, for every subject deemed essential in medical education. The demand for courses in the specialties covering three or more years is greater than the supply. This is especially true where fellowships including stipends have been established, such as those at the University of Minnesota. Graduate schools, when established, should be under the direct supervision of the graduate school of the university.

HIGHER DEGREES IN MEDICINE

With the development of graduate medical schools, provision should be made also for higher degrees in medicine for those who have completed satisfactory work either in general practice or in some specialty, particularly when the work included some productive research. The efficiency of work leading to such degrees, also, should be measured by the same rigid methods as are applied in the granting of degrees of Master of Science and Doctor of Philosophy. These degrees also are more appropriate for higher courses in medicine than are special degrees, as a greater multiplicity of degrees will lead to more confusion. The courses leading to higher degrees might well include residencies in the specialties established in well conducted hospitals, and especially in the teaching hospitals of the medical schools.

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[1] These vacancies are: first year, 38; second year, 73; third year, 66; fourth year, 59.

FUTURE POSSIBILITIES FOR MEDICAL SCHOOLS

Medical schools and teaching hospitals in the future may render a still greater service to humanity, not only by providing a better education for physicians in the field, but also by educating the public regarding diseases, disease prevention and hygiene. The medical departments of our state universities particularly, standing as they do at the head of the educational systems of their states, have special opportunities for greater influence and helpfulness in their states, on condition that they are kept free from political manipulations or interference. The standards of medical education held by state universities should be adopted by licensing boards as the standard qualification for all those authorized to practice the healing art. The state universities also should be given the duty of deciding the worthiness of new educational institutions for which charters are sought—a provision which, if adopted by all states, would soon end the stream of diploma mills, which are casting so much discredit on education in the United States.

In view of the great developments in medicine during the last twenty-five years, paralleling as they do the amazing advances in other lines of human activity, it is hard to predict with any degree of certainty the changes that will occur during the next quarter century.

PRECEPTORSHIPS FOR MEDICAL STUDENTS

Much discussion is being given nowadays to the benefits of preceptorships for students with practicing physicians. Until about thirty-five years ago, students entering some of the medical schools were required to have served at least one year under a preceptor. With the adoption by medical schools of four annual courses of instruction, the requirement of a preceptorship was discontinued. In his preceptorship, the student went with the physician to the homes of patients, watched him make examinations, and assisted in the treatment, preparing splints or other crude apparatus used in the correction of injuries, or concocting medicines for the patients' use. The student also listened to the physician's conversations with the patients and noted the effect on the patient's mental attitude.

When the fourth year of instruction was added, it seemed doubtful whether, in most medical schools, an equivalent of this practical experience was actually provided. Few medical schools then had access to hospitals where patients could be shown either to individual students or to small sections. The students seldom or never entered the hospitals, but in a large amphitheater saw the teacher make examinations and diagnoses and give treatment to patients before the entire class.

In recent years, however, the methods of clinical instruction have been so modified as to provide a fairer equivalent of the practical experience obtained under the better preceptors. In medical schools, during the junior and early part of the senior years, students in small sections are assigned to individual patients, for whom they write histories, make physical examinations and recommend treatment. Then, at an appointed hour, all students of the group accompany an experienced staff member of the hospital, who reviews and corrects each student's history, physical examination and recommendations regarding treatment. Thus the students not only have the opportunity to examine patients personally, but also to have errors of omission or commission corrected by a competent teacher. This supervision brings the clinical work more into agreement with the experience which in former years was provided in the preceptorships.

The present method of clinical instruction has made two other advances: During the senior year the group study plan is followed by clinical clerkships in which each student has one or more patients assigned to him who are looked on as his individual patients as long as he is in that service or the patient remains in the hospital. These clerkships are of greater benefit both to the student and to the patient if the work is carefully checked or supervised by the clinical teacher. Then follows an internship in a hospital, which is now being developed as an additional year of actual clinical instruction and in which the student, still under supervision, is required to assume a larger responsibility in the care of sick or injured persons. Even with this better organized and supervised clinical instruction, however valuable it may be, a part of the experience obtained in preceptorships may still be lacking unless, during his hospital service, the staff physician takes the intern with him in his rounds of visits to his patients in the hospital. In this way, as under the preceptorships, the student can note the physician's inquiries addressed to his patients and note whether or not the patients are improving.

The value of the preceptorship was limited because of the comparatively few patients seen, coupled with the variable teaching ability of the preceptors. In marked contrast is the valuable experience the present-day medical students obtain through their group clinics, clinical clerkships and internships. Such experience in the preceptorships as may still remain is more than met by the great benefits which students can obtain through assignments to service in physicians' offices during summer vacations in accordance with plans proposed by the Medical School of the University of California. Many recent graduates already are obtaining such experience through assistantships in physicians' offices in addition to their hospital internships.

In former days, probably the preceptorships gave the student his only opportunity for clinical experience because few medical schools had access to patients in either hospitals or dispensaries. Preceptorships will be of injury rather than service, however, if they are permitted to interfere with present-day clinical instruction.

THE MODERN HOSPITAL

Hospitals are by no means what might be designated as modern institutions in their organization. In evidence of this fact we may recall that the oldest existing hospital in London, St. Bartholomew's, has already celebrated its eight hundredth anniversary. It has been pointed out, however, that most of the earlier establishments were to all intents and purposes almshouses for the sick; so that the hospitals of the present day have experienced revolutionary changes of organization, equipment and purpose in contrast with their predecessors of former centuries. They have become more closely linked with medicine, along with the gradual development of this discipline. They have become more obviously devoted to the relief of the effects of disease and less ostensibly mere havens for the reception of the indigent distressed. As a consequence, both personnel and clientele have changed with the times.

In an elucidating address recently delivered at the New Haven Hospital on the occasion of the celebration at the centennial of the incorporation of the General Hospital Society of Connecticut, Cole[1] of the Hospital of the Rockefeller Institute stressed an aspect of hospital function that has not yet attained the widespread recognition it deserves. We refer to its part, for example, in the promulgation of the new knowledge concerning disease and its cure. As Cole has succinctly expressed the change, the hospital has emerged from the state of provincialism and has become truly cosmopolitan. It no longer ministers only to a small portion of the inhabitants of a relatively small city, it no longer dispenses its beneficence only to those who enter its portals as patients, but it brings aid to the sick and suffering and protects the well in distant lands. Its influence reaches wherever scientific medicine is practiced. This widening of influence, Cole adds, is due in great measure to the inclusion of education and research into the formula of its function.

So far as the education of the student of medicine is concerned, the hospital has to a large extent taken the place of the preceptor of a generation or two ago. Whether it is completely replacing the best of the older preceptorial system remains to be seen. Is the new order cultivating men as well as scientists? Cole has reminded us that if many practicing physicians are now deprived of the opportunity to teach, they still retain the possibility of preceptorial influence over the interns of our modern hospitals far beyond the routine of ward rounds. The responsible physician may, to quote Cole, be counselor, guide and friend, and through proper direction he may aid in making of the intern a student of disease, a scientific physician, a well trained practitioner and a true gentleman.

It is sometimes contended that research is an obligation of universities or special institutes—not in the province of the hospitals. The basic sciences and the fundamentals of investigative technic are doubtless as a rule most properly and advantageously pursued within academic walls; but the human patients will always present the problems with which medicine is primarily concerned. They are present in hospitals, large and small, urban and rural. The clinic rather than the laboratory affords the opportunity to become familiar with "the multitudinous manifestations of disease." The physician coming into daily contact with the sick has a constant appeal made to him, as Cole reminds us, to search for facts that may result in methods of relief. Until recent years, he continues, while the hospitals were appreciative of the contributions that their physicians made to medical progress, the hospitals themselves played little part in these advances; but now they stand beside the universities and the scientific institutes in educating physicians and in advancing medical science.

MEDICAL DEFENSE IN IOWA

The belief that malpractice suits have become more frequent recently is not borne out by the report submitted by the Committee on Medical Defense at the recent meeting of the Iowa State Medical Society.[1] Prior to April 1, 1909, fifteen suits had been filed. In the seventeen years since that date, 151 suits have been filed. The distribution of such suits by twelve-month periods ending March 31 of each year, and the number of such suits per thousand members, is shown in the accompanying table.

The figures do not cover suits handled without the cooperation of the Committee on Medical Defense, or any demands made on account of alleged malpractice and settled without suit. They may be fairly accepted, however, as an index to the general trend of malpractice claims and litigation in Iowa. It will be interesting to learn just how this record compares with the records of other states.

Fractures and dislocations were the basis of 113 of the 266 suits covered by the committee's report. The results are not stated, and the report does not show the extent to which failure to use roentgen rays was a factor in deciding the outcome. A physician's failure to avail himself of roentgen rays in the diagnosis and treatment of what is possibly a fracture or a dislocation is not conclusive evidence of neglect, but a physician armed with a roentgenogram can defend himself better than one who must rely on less certain evidence. If a patient refuses to cooperate in the use of roentgen rays for diagnosis and in the course of treatment, it is wise to get a written statement of that refusal, or other uncontrovertible evidence of it. Such evidence does not relieve the physician of liability; it helps him to prove, however, that there is no liability.

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[1] Cole, R. I.: The Modern Hospital and Medical Progress, Science **64**: 123 (Aug. 6) 1926.

[1] J. Iowa M. Soc. **16**: 329-334 (July) 1926.

Among the 153 cases not based on fractures and dislocations, the reasons underlying the suits were: roentgen-ray therapy, thirteen; childbirth, ten; tonsillectomy, nine; sponge cases, eight; abortion, seven; appendectomy, seven. Two suits arose from deaths under anesthetics.

The damages demanded amounted to $3,035,597.99, an average of $11,412.02. Fortunately for the defendant physicians in the eleven suits in which verdicts were returned against them, the courts did not appraise damages on a scale quite so expansive, for the damages awarded average only $1,443.27 per case. The cost of the medical defense service to the Iowa State Medical Society during the nineteen years since the service was organized has been $60,351.26. For that amount, 128 claims have been disposed of without suits and 230 suits have been defended. The report does not differentiate between expenses incurred in adjusting claims without suit and in defending suits. Computing the cost of the service as a whole on the basis of suits defended, the average cost was $262.39. This gives an impression of money expended solely for the benefit of a few members of the society who were unfortunate enough to be made the victims of suits. Actually, however, the money spent protected every member of the society against suits. The fact that there was an active committee of responsible, disinterested physicians, prepared to pass justly on claims against their fellow members, to assist them and aggrieved patients in effecting equitable adjustments when physicians have been at fault, and to fight for physicians to the last ditch when they have been unjustly assailed, has certainly tended to deter the ventures of patients and unscrupulous lawyers who otherwise might have resorted to the threat of malpractice suits on inadequate evidence in the hope of collecting easy money. The money spent by the members of the Iowa State Medical Society for this service, $2.31 per capita in 1925, is money well spent. The report of the Committee on Medical Defense indicates the care and thoroughness with which the medical profession of Iowa is dealing with this major problem in medical economics, and reflects credit on those into whose hands the details of the work have been given over.

Distribution of Suits

Year	Membership	No. of Suits Filed	No. of Suits per 1,000 Members
Prior to April 1, 1909	....	15	...
1909–1910	2,081	13	6.2
1910–1911	1,961	10	5.1
1911–1912	1,978	14	7.1
1912–1913	1,653	13	7.7
1913–1914	2,019	10	4.9
1914–1915	2,061	24	11.6
1915–1916	2,186	19	8.7
1916–1917	2,277	17	7.4
1917–1918	2,333	13	5.5
1918–1919	2,259	14	6.2
1919–1920	2,342	7	2.9
1920–1921	2,277	12	5.2
1921–1922	2,448	13	5.3
1922–1923	2,384	16	6.7
1923–1924	2,459	14	5.6
1924–1925	2,374	20	8.4
1925–1926	2,362	15	6.3

Current Comment

SERIES OF CHARTERED DIPLOMA MILLS

There are well known instances of series of diploma mills being conducted by the same individual or group. Between 1888 and 1892 a series of six diploma mills was chartered in Illinois by one Johann Malok, all of which contained the word "German" in their titles. These appear to have been forced out of business through the withdrawal of recognition by the Illinois State Board of Health and the prompt report of such action to other state boards. A second series of four diploma mills was chartered, also in Illinois, between 1889 and 1900 by a group headed by one "J. Armstrong, M.D." As the charter of each institution was revoked, the group continued their barter in diplomas under a new title. The series was brought to a prompt termination when Armstrong was convicted and sentenced to a long term of imprisonment. The charter of the infamous Oriental University, which had its headquarters at Washington, D. C., was revoked in December, 1923. Immediately thereafter the "business" was transferred to a newly chartered "Cosmopolitan University," located at Poplars, Md. This beginning of another series of diploma mills also was checked in January, 1926, when the president of the mill, "Bishop H. P. Holler," was fined $1,000 and sentenced to two years in prison. Three years ago, two medical schools in Missouri were exposed as being engaged in the sale of medical degrees. The charter of one of these, the Kansas City College of Medicine and Surgery, was revoked, June 23, 1926. Information just received states that an "American Medical University" was chartered in Missouri, July 29, 1926, and was opened for business, Aug. 9, 1926. It professes to teach the eclectic system of medicine and gives the same address as that of the Kansas City College of Medicine and Surgery. Of the four persons named as its incorporators, two hold diplomas from the Kansas City College of Medicine and Surgery. It appears, therefore, that another chain of diploma mills has been started in Kansas City, the common characteristic of which will be the teaching of eclectic medicine. The reason for this is that easy access to medical licensure is available through the Arkansas Board of Eclectic

Medical Examiners. It is expected that the charter of the other Missouri diploma mill, the St. Louis College of Physicians and Surgeons, will also be revoked, and a report says that this school also intends to reopen under a new charter, probably also as an "eclectic" institution. The progress of the one and possibly two new medical schools in Missouri, therefore, will be watched with much interest. To check the sale of fraudulent diplomas requires more drastic action than merely the revoking of a charter. This particular case, also, shows how much easier it has been to secure a new charter than it was to have the former one revoked. Is this not a good occasion for Missouri to establish regulations governing the issuing of charters of educational institutions? Certainly Missouri does not desire to remain the headquarters of the traffic in fraudulent *medical diplomas.*

TUITION FEES AND ACTUAL COST OF MEDICAL EDUCATION

As will be noted in the educational statistics published this week, tuition fees have been increasing rather rapidly. In 1910 the average fee per student annually was $118. Fifteen years later, in 1925, this average fee had just doubled, amounting to $236. At present, one year later, the average fee per student has increased to $274. Three of the schools in New York have increased their fees to approximately $525, and a medical school in Philadelphia and one in Baltimore are charging over $400. In 1910, however, some medical schools were still being maintained entirely from students' fees, and a few continued to make profits from that source. While the average fee paid by the student in eighty-two medical colleges in 1916 was just $150, the average expenditure by the colleges per student was $419. Five years later, in 1921, the average fee was $185, but the average expenditure per student was $655. Even though the average tuition fee has been further advanced, it still constitutes only a small proportion of the actual expenditure for the student's medical instruction. If the student is financially able to do so, he should pay a reasonable amount toward the cost of his instruction. For other high grade students who are lacking in the essential finances, scholarships and loan funds have been established in nearly all the high grade medical schools, provisions that were not so important twenty years ago. With the greater severity of the medical curriculum and the unprecedented opportunities for clinical instruction under able teachers, the student of limited means cannot afford to neglect such instruction in an attempt to work his way through the medical school. A wider provision for liberal loan funds will permit any student of excellent scholarship and mentality to take the medical course, irrespective of his financial status.

Diagnosis Must Fit Patient.—I endeavor to approach my cases from the standpoint of the normal, and in any departure from this I *endeavor to keep an open mind as to causation*—hereditary, constitutional, acquired disease, environmental, hysteria, sexual or traumatic. A good physician makes the diagnosis fit the patient, and not the patient fit the diagnosis. —Davis, A. E.: *Lancet* **2**:118 (July 17) 1926.

Association News

THE WASHINGTON SESSION

Appointment of Committee on Fractures to Arrange for Exhibit and Symposium

At the Dallas Session, the Section on Surgery, General and Abdominal, and the Section on Orthopedic Surgery authorized the appointment of a committee to arrange for a cooperative exhibit on fractures for the Washington Session. This committee is to advise with the section secretaries concerning a symposium, which will correlate with the exhibit. The Section on Surgery, General and Abdominal, has appointed Dr. Kellogg Speed of Chicago, and the Section on Orthopedic Surgery has appointed Dr. Nathaniel Allison of Boston. They have obtained the consent of Dr. William Darrach of New York to act as the third member. Further announcement of the appointment of an Advisory Committee and the method of making application will be made in these columns in the fall.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

CONNECTICUT

Legal Change of Name.—A superior court order, issued May 26, at New Haven, adjudged that the name of Jacob Shulansky (M.D.) be changed to Jacob Baker.

Epidemic of Septic Sore Throat.—There was an outbreak of about 200 cases of septic sore throat in Guilford, according to the New York *Times,* August 12, on which date the fourth death occurred. The state department of health has taken charge of the effort to stop the epidemic, and physicians from Yale University Medical School and other parts of the state had come to Guilford to assist. It appears from an investigation by Dr. Millard Knowlton of the state department of health that the disease was traced to milk sold by a dairy one of whose farm hands had septic sore throat. The dairy has been closed.

GEORGIA

Personal.—Dr. Guy G. Lunsford, Weston, has been appointed a trustee of the Medical Department of the University of Georgia by the governor.——Dr. J. F. Covington has been elected to the staff of the John D. Archbold Memorial Hospital, Thomasville.——Dr. Joseph D. Applewhite has assumed the duties of health officer at Macon, to which position he was elected some months ago.——Dr. Bernard W. Carey, director, Commonwealth Fund Child Health Demonstration, Athens, has been awarded the honorary degree of doctor of public health by the University of Georgia.——Dr. Robert E. McClure, Scottsboro, Ala., has been elected county health officer for Brooks County, and will take up his duties about September 1. Dr. McClure is now health officer of Jackson County, Ala.——Dr. T. W. Ayers, who has been medical missionary for many years in China, has accepted a position as secretary of the Baptist State Board of Georgia.

ILLINOIS

Pappeti Penponey Jailed.—Charged with practicing medicine without a license, Pappeti Penponey was bound over to the grand jury, August 5, and remanded to jail in default of $5,000 bonds, *it is reported.* Penponey is said to have claimed to be superintendent of the Elmwood Sanatorium, Elmwood Park, of which institution there is no record in this office.

Personal.—Dr. James L. Miller has resigned as city health physician of North Chicago.——Dr. James S. Archibald, Peoria, has been *appointed head of the department* of radiology at the Decatur and Macon County Hospital, effective, August 15, to succeed Dr. Clarence J. McCullough.——Dr. Mary McKibben Harper, Maywood, has accepted the office of editor and manager of the *Bulletin* of the Medical Women's National Association.

Liquor Licenses Revoked.—The district prohibition administrator with headquarters in Chicago announced, August 16, it is reported, the revocation of the liquor licenses of the following:

Dr. John W. Nicolay, Pontiac, Ill.
Dr. Victor M. Daly, Pontiac, Ill.
Dr. William R. Goodrich, La Place, Ill.

The liquor licenses of the following druggists were also reported revoked:

Frank J. Czernecki, Cicero, Ill.
Lee J. Behl, Pontiac, Ill.

Lawyers Explain Naprapathy.—At the trial of "Dr." Jesse Roberts, a naprapath of Rockford, July 23, who was charged with practicing medicine without a license, the defense lawyers elucidated the term naprapathy. It was argued in the defense that naprapathy does not consist in the treatment of disease, although evidence had been introduced to show that "Dr." Roberts treated Charles Poluyanski, who was paralyzed; naprapathy, it was said by one lawyer, is merely the stretching of muscles by manipulation to relieve tension on the blood vessels; another lawyer declared that naprapathy was like the game of golf, in that it furnished the muscles with artificial exercise; the third lawyer for the defense argued to the effect that the title "Dr." used by the accused was not especially significant, for it might also be applied to a lawyer who improved his client's "physical tone" by relieving him of the worry of some legal difficulty.

Chicago

Automobile Accident Not Fatal.—A report in the newspapers and from other sources of the death of Dr. William R. Campbell who was in an automobile accident, July 11, fortunately proved to be erroneous. Dr. Campbell sustained a skull fracture and other injuries, but has left the hospital and is apparently on the road to recovery.

Society News.—Dr. Effa V. Davis has been elected president of the Chicago Council of Medical Women; Drs. Alice I. Conklin and Sarah M. Hobson, vice presidents; Dr. Agnes Beulah Cushman, secretary, and Dr. Mary M. S. Johnstone, treasurer. The council will award a $25 prize to the author of the best original paper read before it in the next year. Inquiries should be addressed to Dr. Cushman, 25 East Washington Street.

Liquor Licenses Revoked.—The local prohibition administrator, Mr. E. C. Yellowley, announced, August 16, it is reported, the revocation of the liquor licenses of the following:

Dr. Melbourne Clements
Dr. John A. Cousins
Dr. Morris Gindich
Dr. Franklin E. Hall
Dr. Orton C. Hyslop
Dr. Henry F. Lewis
Dr. John W. Lewis
Dr. George S. Livingston
Dr. Effie L. Lobdell
Dr. Leah C. Lurie
Dr. Harvey C. Johnson
Dr. Cleveland C. MacLane
Dr. Kate E. MacRae
Dr. John Pishotta
Dr. Clarence W. Rainey
Dr. Ferdinand Seidler
Dr. James Shaynin
Dr. Cornelius M. Vetten
Dr. W. Voigt

The liquor licenses of the following druggists and drug stores were also reported revoked:

Carl G. Anderson, 4639 North Robey Street.
Hersberg & Lesten, 1000 North Clark Street.
Charles J. Franzman, 1125 West Sixty-Third Street.
Rose Drug Company, 6359 Cottage Grove Avenue.
Klocker Pharmacy, 301 South Halsted Street.

Faculty Appointments at University of Chicago.—The board of trustees of the University of Chicago announced the following appointments to the faculty, August 17:

Dr. Edward V. L. Brown, clinical professor, department of ophthalmology, Rush Medical College.
Dr. Clarence J. McMullen, assistant clinical professor, department of medicine, Rush Medical College.
Dr. William J. Quigley, assistant clinical professor, department of medicine, Rush Medical College.
Merrill H. Killip, D.D.S., clinical instructor, department of surgery, Rush Medical College.
Dr. Howard C. Miller, clinical instructor, department of surgery, Rush Medical College.
Dr. Victor E. Gonda, clinical associate, department of medicine, Rush Medical College.
Dr. Edmund Jacobson, research associate, department of physiology.
Dr. Ernst Pribram, assistant professor, department of pathology, Rush Medical College.
Dr. Chester S. Keefer, instructor, department of medicine, and resident physician, Billings Hospital.
A. Baird Hastings, professor, department of physiologic chemistry.
Thurston S. Johnson, research associate, department of hygiene and bacteriology.
Elizabeth M. Koch, research associate, department of physiologic chemistry.

INDIANA

University News.—The trustees of Indiana University have voted to enlarge the equipment of the school of medicine so that an additional twenty students can be accommodated before the next fall term begins.

State Medical Meeting.—The Indiana State Medical Association will meet this year at West Baden Springs Hotel, September 22-24. The state journal says that there will be the usual golf tournament preceding the meeting; that there will be a general entertainment the evening of the first day which the hotel management will make unique; that the second and third days will be given over entirely to scientific work, and that Ex-Governor Morrow of Kentucky will give the principal address at the banquet Thursday evening. Speakers announced for the meeting include, among others, Dr. Ernst Lowenstein, Vienna, Austria; Dr. Olin West, secretary and general manager, American Medical Association; Dr. Maxwell A. Bahr, Indianapolis, "Malaria Therapy in General Paresis"; Dr. Ralph H. Major, Kansas City, "Arterial Hypertension"; Dr. Charles P. Emerson, Indianapolis, "Emotional Life and Its Importance in the Production of Pathologic Conditions"; Dr. Alexander Randall, Philadelphia, "The Prospect of the Prostatic," and a symposium on the relation of sinus infection to diseases of the eye by Drs. Bernard J. Larkin, John F. Barnhill, Albert M. Cole, Raymond C. Beeler and Smith, all of Indianapolis.

IOWA

Society News.—The Crawford County Medical Society held its annual meeting at Denison, August 6; Dr. Bennett A. Melgaard, Sioux City, read a paper on "Feeding of Children," and Dr. Clifford J. Barborka, Mayo Clinic, Rochester, Minn., spoke on "Diet in Disease."

Typhoid Outbreak.—Nine residents of the village of Albert City were reported, August 4, to have been stricken with typhoid, and among them was the only physician in the village. Physicians and nurses were sent to this community from nearby towns. Albert City had a severe outbreak of typhoid about three years ago.

Personal.—Florence M. Ross, S.B., of Simmons College, Boston, has been appointed head of the department of nutrition in the University of Iowa College of Medicine, Iowa City, to succeed Ruth Wheeler, Ph.D., who resigned to accept a position at Vassar College, Poughkeepsie, N. Y.——Dr. Edward F. Strohbehn has been elected a member of the school board at Davenport to succeed Harry E. Downer, resigned.

LOUISIANA

Personal.—Dr. William D. Phillips, New Orleans, has been elected president of the New Orleans Gynecological and Obstetrical Society for the ensuing year.——Dr. Octave C. Cassegrain, New Orleans, has been appointed surgeon in chief of the French Hospital, which was recently reopened.——Dr. Whyte G. Owen, White Castle, received the honorary degree of doctor of laws at Centenary College, June 9.

Appointments at Tulane University.—Tulane University, New Orleans, announced, August 5, the following appointments in the faculty of the school of medicine for 1926-1927:

Dr. Joseph A. Danna, professor of clinical surgery.
Dr. Christian G. Cole, assistant professor of clinical surgery.
Dr. Edwin A. Socola, instructor in pediatrics.
Dr. Monroe Wolf, instructor in urology.
Dr. Ramon A. Oriol, Jr., clinical assistant in dermatology.
Dr. Joseph M. Hountha, clinical assistant in surgery.
Dr. Daniel J. Murphy, clinical assistant in surgery.
Dr. Richard A. Hale, clinical assistant in surgery.
Dr. Claude V. Perrier, clinical assistant in surgery.

MASSACHUSETTS

License Revoked.—At a meeting, July 1, the board of registration in medicine voted to revoke the registration and cancel the certificate of Dr. Alfred F. Leger, 540 Massachusetts Avenue, Boston.

Medical Examining Boards of New England.—Dr. John M. Birnie, Springfield, Mass., was elected president of the Medical Examining Boards of New England at the annual meeting, Poland Spring, August 5; Dr. Adam P. Leighton, Jr., Portland, Me., vice president, and Dr. Franklin A. Ferguson, Portland, Me., secretary.

Dr. Watkins Goes to Pennsylvania.—Dr. Harvey M. Watkins of the Massachusetts state department of mental diseases has been appointed superintendent of the state training school for feebleminded at Polk, Pa., to succeed Dr. James Moorhead Murdock, who resigned after thirty years' service. Dr. Watkins became a member of the staff of the Monson State Hospital at Palmer in 1916; he served in France during the World War, then at the Monson State Hospital, the Danvers State Hospital and the Belchertown state school, and in 1924 was assigned to the state department of mental diseases.

Dr. Crossman to Superintend Mental Hospital.—Dr. Edgar O. Crossman has retired as medical director of the U. S. Veterans' Bureau, Washington, D. C., and has been appointed superintendent of the U. S. Veterans' Bureau Hospital for Mental and Nervous Diseases at West Roxbury: he will supervise, also from a medical standpoint, the construction of the Veterans' Bureau hospitals for mental and nervous diseases at Northport, L. I., and Bedford, Mass. Dr. Crossman is a former president of the New Hampshire State Medical Society, and chairman of the board of trustees of the New Hampshire State Hospital at Concord.

MICHIGAN

Four Year Course in Medical Biology.—The Michigan State College of Agriculture and Applied Science, East Lansing, will offer this fall a four year college course for the training of laboratory experts, bacteriologists, serologists, chemists and pathologists. The course is designed to give the student, also, a liberal education, and nonmedical studies may be elected to a considerable extent. The announcement states that Michigan State College is prepared to train students in the sciences that may assist the medical profession in their effort to cure and prevent disease; that there is being constructed now a chemical laboratory, comparing favorably with the laboratory of bacteriology previously completed. Cooperation has been established with the Michigan Board of Health laboratories. The new course has been approved by the Michigan State Medical Society.

MINNESOTA

Liquor License Revoked.—The district prohibition administrator, with headquarters at St. Paul, recently revoked the liquor license of Dr. Edwin W. Cooley, Blooming Prairie.

Hospital News.—Willmar Hospital, Willmar, is constructing a $100,000 addition.——Contracts totaling $1,300,000 were let, July 19, for the construction of a 200 bed hospital at St. Cloud by the Sisters of St. Benedict.——The Mayo Clinic, Rochester, is constructing a thirteen story addition which will cost $1,500,000.

MISSOURI

Society News.—Dr. Jabez N. Jackson, Kansas City, President-Elect of the American Medical Association, addressed the Bates County Medical Society at Butler, July 29, on "Physiology in Surgery"; Dr. Frank R. Teachenor, Kansas City, spoke on "Hydrocephalus," and Dr. Charles C. Conover, Kansas City, on "Hematogenous Infections of the Kidney."

Personal.—Dr. Luther M. Callaway, Kansas City, received the degree of master of medical science in otolaryngology from the University of Pennsylvania, June 16.——Dr. George Gellhorn, director and professor of the department of obstetrics and gynecology, St. Louis University School of Medicine, St. Louis, will deliver a series of lectures before the sixth annual summer school of the Vancouver Medical Association, Vancouver, B. C., September 13-16.

Dr. Brown Honored.—A banquet was given, July 29, at Hamilton, by members of the Caldwell County Medical Society in honor of Dr. Tinsley Brown, who has completed more than fifty years in the practice of medicine; among those present were Dr. Edward J. Goodwin, St. Louis, secretary, state medical society, and physicians from Kansas City. Dr. Brown, who was president of the Missouri State Medical Society, 1909-1910, was presented with a gold buckle and a white gold watch and chain and medal on the back of which are engraved the compliments of the Caldwell County Medical Society, which recently elected him an honorary life member. Dr. Brown has also been active in community affairs and, among other things, was postmaster for about eight years.

MONTANA

State Medical Election.—At the forty-eighth annual meeting of the Montana State Medical Society, Billings, July 16-17, Dr. Fred F. Attix, Lewistown, was elected president; Dr. George M. Jennings, Missoula, president-elect; Dr. Samuel K. Campbell, Harlowtown, vice president, and Dr. Elmer G. Balsam, Billings, secretary-treasurer. The next meeting will be at Missoula, and the 1928 meeting in Yellowstone National Park, in conjunction with the state medical societies of Idaho and Wyoming.

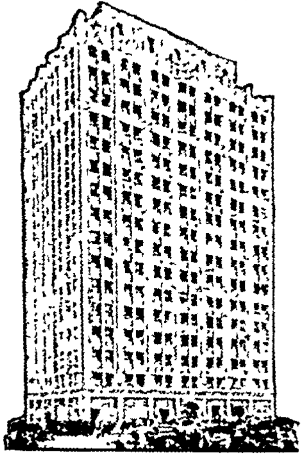
NEBRASKA

Personal.—Homer B. Latimer of the University of Nebraska has been appointed professor of anatomy at the University of Kansas School of Medicine.——Dr. M. Martha McVean-Edmonds has been appointed a member of the board of health of Nebraska City.

Hospital News.—Dr. Michael G. Wohl, Omaha, was recently elected president of the staff of Paxton Memorial Hospital. ——Nebraska City and Otoe County have just completed a campaign to raise $150,000 for a hospital which is now under construction by the Sisters of St. Francis, and which, it is expected, will be completed by the first of the year.

Society News.—Dr. Guy F. Zarbaugh, Dalton, addressed the Cheyenne County Medical Society, Kimball, July 12, on "The General Practitioner's Laboratory."——Drs. Jay C. Byers and Frank T. Hamilton, both of Friend, entertained the Saline County Medical Society, recently.——The Nemaha and Richardson County Medical Societies held a joint meeting and picnic at City Park, Shubert, July 14; Dr. William L. Shearer, Omaha, gave an address on "Focal Infection," and Dr. Arthur C. Stokes, Omaha, on "Gastric and Duodenal Ulcer."

Medical Society of Missouri Valley.—The new eighteen story medical arts building at Omaha will be dedicated by the officers of the Medical Society of the Missouri Valley at the annual meeting of that society, September 15-17. All of the lectures and diagnostic clinics will be held in the auditorium of this building as well as the commercial exhibits. On Thursday, the members will go to Council Bluffs, where clinics will be held. Members of the faculty of the Universities of Missouri, Kansas, Iowa, Nebraska and Creighton University will give short laboratory demonstrations. Among those on the program are Dr. Jabez N. Jackson, Kansas City, President-Elect, American Medical Association; Dr. William Allen Pusey, Chicago, Past President of the American Medical Association; Dr. Hilding Berglund, University of Minnesota; Dr. Irving S. Cutter, Northwestern University Medical School; Dr. McKim Marriott, dean and professor of pediatrics, Washington University School of Medicine, St. Louis; Dr. Edward C. Rosenow, University of Minnesota; Dr. Gabriel Tucker, Philadelphia; Dr. Russell L. Haden, University of Kansas School of Medicine; Dr. E. H. Skinner, Kansas City, Mo., and Carl R. Moore, Ph.D., University of Chicago. The secretary of the society is Dr. Charles W. Fassett, 115 East Thirty-First Street, Kansas City, Mo., and the president, Dr. Arthur D. Dunn, Omaha.



NEW JERSEY

Outing for Crippled Children.—Four hundred crippled children from all parts of the state were given an outing at Asbury Park, August 2, by the local hotel men's association in conjunction with the New Jersey Elks' Lodge. The children were entertained on the beach and at luncheon at the hotels, and given an automobile trip in the country. Joseph G. Buch, Trenton, has been elected chairman of the New Jersey Crippled Children's Commission. The commission will compile statistics as to the number and condition of crippled children in the state.

NEW YORK

Hospital News.—Ground was broken at Saranac Lake, August 14, for the new Northwoods Home of the Adirondack Fund for the Tuberculous. Northwoods Sanatorium has been in existence two years, and larger quarters have been found necessary for beneficiaries of the fund.

Personal.—Dr. James J. Chandler has been provisionally appointed supervisor of tuberculosis dispensaries and clinics in the state department of health; Dr. Chandler has had several years' experience in tuberculosis sanatoriums, and lately has been doing postgraduate work at the Massachusetts General Hospital, Boston, and the New York Post-Graduate Hospital.

Society News.—Dr. Abraham H. Aaron, Buffalo, was elected president of the Lake Keuka Medical and Surgical

Association, July 27, and Dr. John A. Hatch, Penn Yan, was reelected secretary-treasurer. The meeting this year was attended by more than 250 persons. Among the speakers at this meeting were Drs. Thomas Klein, Philadelphia, and Edward S. Welles, Ray Brook.

District Societies Plan Fall Meetings.—The *New York State Journal of Medicine* considers the importance of district branch medical societies in organized medicine, and notes that the eight New York district societies have already held preliminary meetings to plan for their fall meetings. It has been decided to hold these meetings as follows:

First District branch, Briar Cliff, November 10.
Second District branch, Kings County Medical Building, Brooklyn, some time in November.
Third District branch, place not fixed; tentative date, September 24-25.
Fourth District branch, time and place not fixed.
Fifth District branch, Watertown, October 14.
Sixth District branch, Oswego, September 21.
Seventh District branch, time and place not fixed.
Eighth District branch, Buffalo, October 27-28.

New York City

Smallpox Outbreak.—Five cases of smallpox in negroes, none of whom had ever been vaccinated, were reported a few days ago in one section of Brooklyn. The health commissioner stated that there was no occasion for alarm over the situation.

Personal.—Louis I. Dublin, Ph.D., of the Metropolitan Life Insurance Company, Health Commissioner Harris, and the chief executive officer of the state transit commission are drafting a stagger system for subway traffic, and have thus far classified the industries of Manhattan into thirty-five subdivisions; these will be used as a basis for trade conferences on subway traffic relief.

Another Alleged Milk Grafter Sentenced to Penitentiary.—Former Assistant Corporation Counsel William H. Kehoe was sentenced, August 12, to an indeterminate term in the penitentiary, it is reported, for conspiring to graft in the importation of milk into the city from unapproved sources. The maximum sentence is three years. Kehoe is said to have conspired with Thomas J. Clougher, then secretary to Health Commissioner Monaghan, and with milk dealers. The judge, in sentencing Kehoe, said that he would not impose a $500 fine in addition to the term in prison, for he believed that the state did not want to take any of Kehoe's ill gotten money. Kehoe is known to have received $23,000 during two years in this kind of work, but that is said to represent a small portion of the proceeds which he presumedly shared with Clougher (The Journal, July 10, 1925, p. 106). The mayor has appointed Judge Kelby, former justice of the appellate division of the supreme court, as a special counsel to review the evidence collected in connection with the milk investigation in the health department, and to prepare cases for prosecution in the five counties of the city.

NORTH DAKOTA

Freshman Class Filled.—The quota for the freshman class at the University of North Dakota Medical School for next year has been filled; the twenty-eight successful applicants were selected from a total of seventy-five; twenty-two of them are from North Dakota; one is a woman. Dr. Harley E. French, dean of the medical school, who has been on leave of absence, will be in charge when the school opens this fall; John G. Sinclair, M.S., of the faculty, is on one year's leave of absence.

OHIO

Society News.—Dr. Edward S. Judd, professor of surgery, University of Minnesota Post-Graduate School, will address the Summit County Medical Society, Akron, September 7, on "A Consideration of Surgery of the Biliary Tract."

Leper Discovered in Akron.—The case of leprosy recently discovered in the city of Akron was the first of its kind in the history of the local health department. The patient was a man, aged about 25, a native of Greece, and a sailor until coming to Akron about four months ago.

Summer Camps for Crippled Children.—Several hundred crippled children in various parts of Ohio have been sent to summer camps for several weeks through the efforts of Rotary Clubs, especially those of Cincinnati, Akron and Canton, which have camps established exclusively for physically handicapped children. Such camps are not restricted, however, to children who live in the communities in which the clubs are located. The Ohio Crippled Children's Society states that groups interested in helping crippled children which have not heretofore been sending them to summer camps should consider the desirability of doing so next year.

PENNSYLVANIA

Society News.—Dr. Samuel Calvin Smith, Philadelphia, addressed the Cumberland County Medical Society, recently, on "The Irregular Heart, Its Clinical Varieties and Their Treatment."

Eight Chiropractors Arrested.—With information furnished by the state board of medical education and licensure, warrants were recently issued for the arrest of six chiropractors in Williamsport, one in Muncy and one in Jersey Shore, charging them with practicing without a license in violation of the state law. When arraigned in the justice's court, they were given until August 16 to prepare their defense.

Personal.—Dr. J. Swan Taylor has been reelected medical inspector of the city school of Johnston.——Dr. Solis C. B. Hertzog has been appointed superintendent of the Neversink Mountain Tuberculosis Sanatorium, Reading.——The late Dr. Oliver C. Heffner, Pottstown, provided in his will for a trust fund of $5,000, the income of which is to be used in interest of missionary work in China.——Dr. David W. Thomas, Lock Haven, was elected president of the West Branch Medical Society at the annual meeting, August 4.——Drs. John L. Groh and John E. Marshall have been appointed school physicians for the city of Lebanon.

Hospital News.—The Geisinger Memorial Hospital, Danville, has started the construction of a $250,000 addition, which will increase the capacity of the institution by thirty beds.——The Reading Hospital, which has been in the course of construction for about two years, will be formally opened, October 2. The hospital staff will give a banquet to all the physicians of the city of Reading and of Berks County. The new hospital, it is said, will represent an expenditure of about $4,000,000.—The General Hospital of Wilkes-Barre has contracted for the erection of an eight story addition which will cost about $345,000, and give the hospital a total capacity of 500 beds.

TENNESSEE

Typhoid Outbreak.—The outbreak of typhoid in Nashville noted in The Journal, August 14, had, on August 7, amounted to forty-seven cases with seven deaths, it is reported.

Society News.—The Tri-County Medical Society met at Hickman County Court House, Centerville, August 3, and, among others, was addressed by Dr. William K. Edwards, Dr. J. N. Smith, Waverly, and Dr. John M. Lee, Nashville. The next meeting will be in Dickson in September, 1927.

Eye, Ear, Nose and Throat Hospital.—The Memphis Eye, Ear, Nose and Throat Hospital was opened to patients, August 2; there are thirty-seven rooms for private patients, and a total of seventy-two beds and five operating rooms; twenty-five beds have been endowed as memorials; the dispensary will be opened daily for indigent patients. The *Memphis Medical Journal* says that the hospital is the finest of its kind in the South, and that the credit for its conception, promotion and erection is due Dr. Louis Levy; there is a staff of ten surgeons in the eye department, and fourteen in the ear, nose and throat department.

County Health Units.—There is now a total of thirteen full-time county health organizations in Tennessee, the most recent one being Lauderdale, established, July 1, with an appropriation by the county of $4,500 and a like amount by the state. Dr. Benjamin M. Primer is director of the Lauderdale department and is assisted by a sanitary officer, a public health nurse and a clerk. The Davidson County Health Department increased its budget by $2,500, and the county court has ratified the appropriation of $10,000 in addition for the treatment and prevention of tuberculosis. At the July term of court a three cent health tax was voted in Rutherford County.

WEST VIRGINIA

Hospital for Colored Insane.—A state hospital for colored insane and a state industrial school for boys was opened at Lakin, Mason County, June 13. Dr. Constantine C. Barnett is superintendent of the hospital. This institution and the U. S. Veterans' Hospital no. 91, at Tuskegee, Okla., are said to be the only institutions supported by the public whose superintendents are negroes.

Tri-State Meeting.—The Central Tri-State Medical Society will meet in Huntington, September 9; Dr. William Wayne Babcock, Philadelphia, will speak on "Problem and Practice in Biliary Surgery"; Dr. Pascal Brooke Bland, Philadelphia, on "The Management of Labor," and Dr. Samuel G. Gant, New York City, on "Surgical Treatment of Colitis and Demonstrating the Method of Operating Anorectal Disease Under Local Anesthesia," with moving pictures.

WISCONSIN

Professor of Psychology Appointed.—Prof. Kurt Koffka of the University of Giessen, Hesse, Germany, has been appointed professor of psychology at the University of Wisconsin for the academic year 1926-1927, it is reported.

Society News.—About 200 members and their wives attended the first annual meeting of the Fifth Councilor District, Elkhart Lake, July 1-2; the first day was devoted largely to recreation, entertainment and a banquet at which Dr. Joseph F. Smith, president of the state medical society, and Dr. Morris Fishbein, Chicago, editor of The Journal, gave addresses; July 2, Dr. Herman L. Kretschmer, Chicago, spoke on "Diseases of the Kidney"; Dr. Joseph L. Miller, Chicago, on "The Pulpless Tooth"; Dr. Erwin R. Schmidt, University of Wisconsin Medical School, on "Surgical Treatment of Chronic Adhesive Pericarditis."——Dr. William D. Stovall, director, state laboratory of hygiene, addressed the Third Councilor District Medical Society, recently, at Wisconsin General Hospital, Madison, on "Advances in the Diagnosis of Scarlet Fever," and gave demonstrations of the Dick and Schick reactions; Dr. Joseph Brennemann, Chicago, "Treatment of Pyloric Stenosis and Allied Conditions," and Dr. Raymond C. Blankinship, Madison, on "Cholecystography."——Dr. Arthur W. Rogers, Oconomowoc, was recently elected president of the Milwaukee Neuropsychiatric Society, and Dr. William T. Kradwell, Wauwatosa, secretary-treasurer.——The Marinette-Florence County Medical Society held its annual picnic at Marinette, July 21; the baseball teams wore masquerades.——The eighty-fifth annual meeting of the State Medical Society of Wisconsin will be at Madison, September 15-17. An abstract of the program was published in The Journal, July 31.——Dr. Julius H. Hess, Chicago, addressed the Milwaukee Pediatric Society, August 11, on "Infant Feeding."

CANADA

University News.—Dr. Donald C. Balfour of the Mayo Clinic, Rochester, Minn., has given the University of Toronto $4,000 to establish a lectureship in surgery, and the board of governors has accepted the gift; it will probably be used, the *Canadian Medical Association Journal* says, to bring noted surgeons to the university to deliver lectures from time to time.

"Eye Specialists" Swindle Another Woman.—A swindle similar to that reported under Mississippi in last week's Journal was reported from Oshawa, Ont., August 7. Two men called at the farm of John Puckrin, introduced themselves as eye specialists from Montreal, made an examination of Mrs. Puckrin's eyes, told her that she would be blind within six months because of cataracts. The "experts" explained that Mrs. Puckrin could either go to Toronto for an operation, which would cost about $1,500, or be treated then and there with radium, which would cost $900. One of the pair then instilled a greenish liquid into Mrs. Puckrin's eyes and assured her it would save her sight. A physician in Whitby is said to have examined Mrs. Puckrin's eyes a few days after this performance and found that she had had no indication of cataract. One is described as fair, medium height, and wearing gray-rimmed spectacles; the other man was dark, short and stout; they traveled in a sedan.

Personal.—Dr. Hubert D. Kitchen of the Manitoba Medical College, and formerly a fellow in medicine of the Rockefeller Foundation, has been awarded the Prowse prize for original research; the subject of his treatise was "Goiter in Children: A Study in Treatment."——Dr. William F. Roberts, St. John, N. B., has been appointed director of the department of physiotherapy at the General Public Hospital.——Dr. Manly Finkelstein, for five years city bacteriologist, Manitoba, has resigned to engage in private practice.——Dr. Maxwell M. Wintrobe has been appointed to the Gordon Bell Memorial Fellowship of the College of Physicians and Surgeons at Manitoba; he will undertake research in connection with pernicious anemia and the leukemias, under direction of the medical research committee.——Dr. John D. McEachern has been elected president of the Winnipeg Medical Society.——Dr. Delbert J. Millar has resigned as chief medical referee of the Workmen's Compensation Board of British Columbia after about seven years' service, to engage in practice at Powell River; the commissioners and staff presented Dr. Millar with a smoker's cabinet and pipes and a sphygmomanometer as a token of their regard.

GENERAL

Inter-State Postgraduate Assembly.—The Inter-State Postgraduate Assembly of North America will be held in the municipal auditorium, Cleveland, Ohio, October 18-22. Preassembly clinics will be held in all Cleveland hospitals, October 14-16. Many distinguished foreign physicians will be present at this meeting.

Automobiles Kill 121 a Week.—Reports to the U. S. Department of Commerce from seventy-eight large cities in the United States for the four week period ending July 17 indicate that the total number of automobile fatalities for that period was 484. A summary of sixteen four-week periods as far back as May 23, 1925, shows that the smallest total number of deaths for any one of them was 350 for the period ending March 27, 1926, and the highest total 632 for the four week period ending Dec. 25, 1925. Five cities in this group showed no automobile fatalities for the four weeks ending July 17, 1926.

American Academy of Physiotherapy.—The annual meeting of this society will be at the Hotel Pennsylvania, New York, September 6-7, under the presidency of Dr. Frank B. Granger, Boston. Among the speakers will be Dr. Sinclair Tousey, New York, "Accidents from Electricity"; Dr. William D. McFee, Haverhill, Mass., "Medical Diathermy"; Dr. Abram Bern Hirsch, New York, "Physiotherapy Technicians; Their Training and Supervision," and Dr. Louis F. Bishop, New York, "Relation of Physiotherapy to the Treatment of Heart Disease." Dr. William S. Bainbridge will be toastmaster at the banquet Monday evening, and among the guests will be Dr. Wendell C. Phillips, New York, President, American Medical Association.

Society News.—Dr. Philip H. Cook, Worcester, Mass., has been elected president of the New England Roentgen-Ray Society; Dr. Curtis H. Jennings, Fitchburg, Mass., vice president, and Dr. Merrill C. Sosman, Boston, secretary-treasurer.——The National Medical Association will hold its annual meeting at Philadelphia and Atlantic City, August 23-28, under the presidency of Dr. Walter G. Alexander, in whose honor a testimonial meeting will be held at the Union Baptist Church, Tuesday evening, and to whom the "quarter century gold cane" will be presented. The sessions will be in the public school buildings at Nineteenth and Wharton streets, and Nineteenth and Reed streets; Wednesday will be devoted to clinics and Friday evening and Saturday to recreation at Atlantic City.

An Estimate of Medical Expenditures.—U. S. Senator Ransdell in a speech on the floor of the Senate recently (The Journal, July 24, p. 254), gave an estimate of medical expenditures in this country which was said to have been made by Charles H. Herty, Ph.D., formerly professor of chemistry, University of North Carolina, and now president, Synthetic Organic Chemical Manufacturers' Association, New York. The estimate as given by Senator Ransdell was as follows:

Drugs, including "patent medicines"	$ 500,000,000
Physicians' services (estimated on basis of average income per physician annually of $1,500)	220,000,000
5 per cent interest on the $624,000,000 of hospital investments in lands, buildings and furnishings	31,000,000
Hospital maintenance	264,000,000
Total	$1,015,000,000

American Public Health Association.—The fifty-fifth annual meeting of this association will be at Buffalo, October 11-14, with headquarters at the Hotel Statler. The regular conference of the New York State Health Officers and Public Health Nurses will be held in conjunction with this meeting and will present a separate program, October 12; there will be special sessions on mental hygiene, the teaching of health in colleges, and milk supply; particular attention will also be given the subjects of measles, ventilation, the pollution of boundary waters, and rural hygiene; in all, 140 speakers are listed on the program. Members of the association and their families will receive a 25 per cent reduction on railroad fare traveling to and from the meeting, and nonmembers may apply for reduced fare to the executive secretary, Mr. Homer N. Calver, 370 Seventh Avenue, New York, who will also provide other information and programs for the meeting if requested.

Proposed Survey of Hospitals for Negroes.—At a recent conference at the headquarters of the American Medical Association of representatives of organizations interested in medical schools and hospitals for negroes, Dr. Henry M. Green, Knoxville, Tenn., president, National Hospital Association, and Dr. Carl G. Roberts, president-elect, National Medical Association, stressed the need for hospitals for negro interns; it was said that of the 208 known hospitals for negroes only seven had been approved for internship, and that of the 100 or more colored physicians graduating each year, only about thirty can find hospital appointments; others present at the conference were Dr. William H. Walsh, of the American Hospital Association; Dr. Malcolm T. MacEachern of the American College of Surgeons, and Col. Joseph H. Ward of the U. S. Veterans' Bureau and Dr. Nathan P. Colwell and Mr. Homer F. Sanger, of the American Medical Association. It was decided that a survey of hospitals for negroes was a necessary preliminary step to improvement. An outline will be submitted to the three leading national organizations interested in hospital development with an estimate of the cost of a survey; efforts will then be made to secure funds to conduct the work.

Pan-American Congress of Directors of Health.—The first Pan-American Congress of Directors of Health will meet in Washington, September 27-29. This meeting is not to be confused with the Pan-American Sanitary Conventions that have been held heretofore. Thirteen American republics have accepted invitations to send delegates to the September conference, and in addition it is expected that various members of the Pan-American Sanitary Bureau will be present in their official capacity. The program provides for papers and discussions of questions of great interest to the Western Hemisphere. There have been a number of Pan-American Sanitary Conferences heretofore, and their influence in preventing the international spread of typhus fever, plague, smallpox and yellow fever, and in reducing the restrictions on commerce, has been immeasurable. These conferences culminated in the adoption of the Pan-American Sanitary Code at Havana in November, 1924, one of the most important events in the history of international sanitary regulations. This document, which is now a treaty, was in great part the work of the Pan-American Sanitary Bureau. In times past, no less than ninety epidemics of yellow fever have appeared in the United States, and in every instance, the disease was imported from places in Latin America. There are today fewer cases of yellow fever in Latin America than at any other time in the history of the disease; for the first time in the history of the United States' Quarantine Service, not a ship was detained during the fiscal year 1925-1926 on account of yellow fever. Bubonic plague, which prevails in some Latin American countries, will require the attention of health officers for many years. It behooves all nations to cooperate in the eradication of plague, and in this, as in other similar problems, the Pan-American Sanitary Bureau will continue to be actively engaged. The work of this bureau must necessarily increase unless nations resort to quarantine restrictions for the prevention of pestilence; this the bureau is endeavoring to avoid.

LATIN AMERICA

Free Antituberculosis Serum.—The National Department of Hygiene of Argentina resolved in April to administer free to those requesting it at the Bacteriologic Institute or at the health offices the antituberculosis serum prepared and given according to the formula of Calmette.

Lepers Dismissed.—Certificates of dismissal were given to twelve patients of the leprosarium of Cabo Blanco, May 16, after they submitted to rigorous tests by the head of the institute, Dr. Benchetrit; according to the *Bulletin of the Pan-American Union* they were declared cured.

Research Institute at Panama.—The president of Panama has invited a party of professors from Johns Hopkins, Harvard, Minnesota and the U. S. Department of Agriculture to come to Panama, where they will establish a central research laboratory at Penonomé to study conditions of the soil favoring the development of hookworm and its epidemiology and treatment. The International Health Board of the Rockefeller Foundation is financing the study (The Journal, April 17, p. 1220).

Recrudescence of Yellow Fever in Brazil.—The *Folha Medica* states that the recent military maneuvers in Brazil seem to have been responsible for a number of scattered cases of yellow fever in the last few months in three states. The soldiers from the southern states were exceptionally susceptible to the disease when they encountered it for the first time in the north. The small focus at Pirapora is in direct railroad communication with Rio, and vigorous prophylactic measures have been taken.

Personal.—Dr. Afranio do Amaral of the Butantan Institute, São Paulo, Brazil, has been invited to organize a section for the study of animal poisons, toxins and antitoxins in the Institute of Tropical Biology and Medicine, Harvard University.——Dr. Waldo L. Schmitt of the Smithsonian Institution, Washington, D. C., recently returned to that city after studying the work on antivenom serums at the Butantan Institute, São Paulo, Brazil.——Dr. F. Sierra is director of the newly inaugurated sanatorium for the tuberculous, at Tlalpam, the first sanatorium of the kind to be organized in Mexico. It has accommodations for forty patients. The directors of the national railroads initiated the movement for construction of the sanatorium.——An honorary degree has been conferred by the University of Mexico on Prof. H. Obermaier of the University of Madrid, in tribute to his research on prehistoric anthropology.——The Wilde prize is awarded annually by the Buenos Aires Sociedad de Beneficencia for exceptional devotion among the staffs of the various public hospitals. The recipient this year was Dr. F. Arancibia of the Children's Hospital.——Dr. C. A. Castaño, Buenos Aires, has been elected an honorary member of the Berlin Obstetric and Gynecologic Society.

FOREIGN

Pediatrics Congress Postponed.—The annual meeting of French-speaking pediatrists, which was scheduled to convene at Lausanne in September, has been postponed till next year on account of the low exchange rate of the franc.

Cholera Epidemic at Shanghai.—A newspaper report, August 7, stated that the outbreak of cholera among the natives of Shanghai, China, in the Pootung district is causing more than 1,000 deaths a day, but that only two of the 20,000 foreign residents had died. This is a densely crowded and unsanitary area in which about 1,500,000 natives dwell; conditions are such that it is impossible to obtain an accurate account of the number of deaths from cholera. A later report indicated that the epidemic had abated to some extent with the advent of cooler weather.

British Medical Association Election.—At the annual meeting of the British Medical Association, Nottingham, July 20, Mr. Robert George Hogarth, senior surgeon, General Hospital, Nottingham, was inducted into office as president for 1926-1927, and Sir Robert W. Philip, honorary physician to the king in Scotland, and professor of tuberculosis, University of Edinburgh, was elected president for the year 1927-1928. The Gold Medal of Merit of the association was presented to Sir Humphry Rolleston in recognition of his distinguished service to the profession and to the association. The Sir Charles Hastings Clinical Prize was presented to Dr. Norman Porritt, general practitioner of Llandudno, for a clinical study in the course of his daily work of "The Abdomen in Labor." Among the foreign guests at this meeting were Dr. Evarts A. Graham, St. Louis; Dr. Konrad E. Birkhaug, New York; Dr. Edward H. Cary, Dallas, Texas; Dr. Mary E. Botsford, San Francisco; Dr. Elmer I. McKesson, Toledo, Ohio; Dr. F. Hoeffer McMechan, Avon Lake, Ohio, and Dr. James W. Elphinstone, Pittsburgh.

The representative body of the association unanimously approved the negotiations made last year in South Africa by its secretary, Dr. Cox, and demonstrated its appreciation of his work in South Africa in the cause of unity in the medical profession and in bringing about the new organization, "The Medical Association of South Africa (British Medical Association)." The treasurer reported that the income of the British Medical Association in 1925 was £131,000; in 1924, it was £122,000, and in 1923, £117,000. The accounts show a similar rise in expenditure, the increase in both sides of the ledger being due to the increase in membership in the association. The *British Medical Journal* earned for advertising £44,370 in 1925, and printed 1,778,000 copies of the journal. The 1928 meeting of the association will be held in Cardiff.

Deaths in Other Countries

Dr. **C. de Mooy,** The Hague, ex-chief of the army medical department in the Netherlands, aged 92. He devised tents, litters and other articles currently used by the military in transportation of the wounded, and was called the "Jules Verne of the air" on account of his suggestion in 1892 that a captive balloon might be utilized to transport the wounded.——Dr. **Joaquín de Salterain,** Montevideo, formerly minister of foreign relations for Uruguay, senator, chief of the public health service and author of "Intimidades," and of works on ophthalmology.——Dr. **A. Lesser,** emeritus professor of legal medicine at the University of Breslau, aged 75.——Dr. **G. Dieballa,** professor of diseases of metabolism, and Dr. **G. Hainiss,** privatdozent of vaccination, both of the University of Budapest.——Dr. **G. Rioux,** Bordeaux, succumbed to a professionally acquired septicemia. The decoration of the Légion d'honneur was conferred posthumously.——Dr. **J. Casasayas,** professor of pediatrics at the University of Barcelona.——Dr. **M. Mênard,** radiologist, Paris, August 2, aged 53, of cancer of professional origin.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 31, 1926.

Annual Session of British Medical Association

At the ninety-fourth annual session of the British Medical Association, recently held at Nottingham, Mr. R. G. Hogarth devoted part of his presidential address to the progress of medical science. The decrease in the general rate of mortality was, he said, one of the most striking proofs of the rapid forward march of medical science. It had fallen by nearly a half in fifty years. The birth rate had fallen by even a larger proportion in the same period, and the net total figures of the population continued to show an increase only because of the longer life. More desirable than to make a brave show in the statistical tables and increase the number of nonagenarians and centenarians, however, was to raise the general standard of health among all ages of the community. Would it not be better for the state, if we took pride, not in rewriting the tables of mortality but in raising health conditions to a higher level? The state must concern itself more and more with the health of the nation. Public opinion had to be educated continuously and had proved amenable to tactful handling. For example, the compulsory notification of diseases was now extended to as many as twenty-two notifiable diseases, and would probably be extended much further in the near future. The scope of preventive legislation was almost limitless, and we were likely to see the state interfering—or intervening—more and more in the interests of public health. The state was beginning to assert its regulative powers in departments of social and even family life. They might expect sharp controversy if and when the state concerned itself directly with eugenics and asserted its solicitude for a generation not yet born, not by the provision of cradles and nurseries but even by the determination of parentage itself. Now that the idol of state socialism had been set up, soon or later the theorists would attempt to invest the ministry of health with increasingly autocratic powers, and would seek to transform the whole medical service of the country into a state service, with state hospitals, state examinations and the state payment. Whether this would be as efficient as the present system was very doubtful.

At the representative meeting, the satisfactory position of the association in point of membership was described. The membership now amounts to 31,600 which is 2,000 more than last year. The increase has been 3,000 in the last three years. The organization overseas is proceeding satisfactorily. There is good reason to be gratified with the steps taken last year as to affiliation with the Canadian Medical Association. As far as India is concerned, no very active steps have been taken or could be taken in the past, but it is hoped that something will be done in the future for the better organization of the profession there. A resolution was carried expressing gratification with the arrangement whereby there will in future be only one organized body representing the profession in South Africa. This arrangement was arrived at as the result of negotiations between the South African committee, representing the branches of the British Medical Association, and the South African Medical Association. A congratulatory cable was sent to the new South African Association, which now forms an integral part of the British Medical Association. Dr. Alfred Cox, medical secretary of the association, was thanked for this successful result of his mission to South Africa. With consummate tact and persuasive ability he overcame the opposition of the separatist element by showing them that their interests would be best served by membership in one great organization, while at the same time enjoying perfect autonomy.

Postgraduate Hostel in London

The immense size of London with its dozen large hospitals which are also medical schools, to say nothing of the host of smaller and special hospitals, has proved an insuperable bar to the centralization of postgraduate teaching. Hence the various organizations established from time to time, including the present fellowship of medicine, have been only a partial success, in spite of much well directed effort of the leaders of the profession. But one form of centralization appears well on the way to accomplishment. Physicians who visit London for the purpose of postgraduate study have long felt the want of opportunity to meet socially their teachers and fellow students. On the initiative of Mr. A. P. Bertwistle, a scheme has been brought forward and has received influential support. The hostel is at the Imperial Hotel, Russell Square, which is near many of the teaching hospitals, the British Medical Association's house and the Royal Society of Medicine. The management of the hotel has provided the hostel with smoking and reading rooms and a recess in the dining room for the sole use of physicians. Physicians are free to use these rooms whether resident in the hostel or not. The aims of the hostel may be thus summarized: 1. A warm welcome will be extended to all medical visitors coming to London. This is considered especially due to those from the dominions and from foreign countries as a slight return for the hospitality lavished on us by our cousins over the seas. 2. Exchange of thought among visitors coming from different parts of the world should be valuable. This should take place without the medium of lectures. Informal discussions will be arranged periodically. Different speakers selected from the residents will, on other occasions, deal with the various aspects of a single disease. 3. It is felt to be desirable that visitors from the dominions and foreign countries should have the opportunity of hearing the views of our provincial physicians and surgeons; London men are probably equally anxious to hear them. Under existing conditions, visitors often have no time to go to the provinces. 4. The work of all postgraduate institutions, especially the fellowship of medicine, will be furthered. 5. There will be a "ladies' night" occasionally, in order to promote the social side. Residents and nonresidents will then be able to invite guests. A speech on some topic of general interest or a dance will follow the dinner.

The Sensitiveness of Plants

Under the auspices of the British-Indian Union, the Indian scientist Sir Jagadis Bose, F.R.S., spoke at the Royal Society of Arts on "The Unvoiced Life." He said that a man's pretension as a highly sensitive being received a shock when certain plants were found to be a great deal more sensitive than the lord of creation. It must, however, be admitted that the plant was practically deaf, for it was little affected by sound. The case was quite different in regard to light, for a plant detected minute changes in the intensity of light unnoticed by the human eye. Still more wonderful was the wide range of its perception of different octaves of visible and invisible waves. Of the multitudinous ether waves, the human retina responded to a single octave. The plant not only responded to the ultraviolet but also to the invisible wireless waves at the opposite end of the spectrum. It was not unlikely that the plant possessed a quite unsuspected "sixth sense," for some of his records with plants showed a characteristic modification, due to the presence of certain individuals, which persisted even after exclusion of the factor of radiation from the human body. The deceptiveness of external appearances was illustrated by reference to the famous "praying palm," which prostrated itself every evening as the temple bells called people to prayer at Faridpore. The tree appeared, when erect in the morning, like a living giant, twice the height of a man. Toward evening it leaned forward, bowed down its head, and pressed the ground with its crown of leaves in an attitude of devotion. Investigation showed, however, that there was no special sanctity attached to this performance, for all trees and their branches and leaves moved up and down in the course of the day unnoticed. The tree was never at rest; it was in a state of constant movement in definite response to stimuli from without. In the plant, drooping and withering occurred long after death. How, then, did the plant give its last answer? In man, at the moment of death, a spasm passed through the whole body, and similarly in the plant a great contractile spasm occurred accompanied by an electric spasm. In the script of the lecturer's death recorder, the line that up to this time was being drawn became suddenly reversed and then ended. This was the last answer of the plant. These mute companions, silently growing beside our door, had told us the tale of their life tremulousness and their death spasm by a script that we could understand.

Rheumatic Heart Disease in Children

A subcommittee of the British Medical Association, presided over by Sir Humphry Rolleston, has investigated the subject of rheumatic heart disease in children and presented an important report. The need of rheumatic children for prolonged care is as yet imperfectly realized. Here and there institutional accommodation is being planned, but for the most part the urgent need for this means of treatment is not recognized. The subcommittee insists that it is necessary for every large city to be provided with means for the institutional treatment of rheumatic children, in the course of which they can receive controlled rest with plentiful sunlight and fresh air concurrently with education over periods of months. The policy advised by the subcommittee comprises: (1) stricter attention to the prevention of damp in dwelling houses; (2) further investigation of housing conditions and of the geographic distribution of the disease; (3) pooling of material for investigation of the bacteriologic aspects of rheumatic infection in childhood; (4) careful and discriminating use of the operation of tonsillectomy, and (5) rapid expansion of the accommodation available for prolonged institutional care of rheumatic children. The subcommittee says that it is impossible not to accept the tradition that rheumatism flourishes in a climate preponderatingly damp and cold, and that our own notorious climate is an important factor in increasing the prevalence of the disease. This view receives strong support from the fact that here, as in Scandinavian countries, it is a disease of the colder and wetter six months of the year. Although technically the rheumatic infection may not be a "poverty disease," it is certainly a disease of the poorer classes. There is abundant evidence to associate rheumatic infection with damp houses. Roughly, nearly two thirds of rheumatic patients are first infected when living in damp rooms. The disease in England is essentially one of children in the elementary school, suffering from tonsillar sepsis. Powerful predisposing factors are climate, age, social status, industrialization, damp dwellings and tonsillar infection. Of the minor factors, attendance at school is probably the most important. Nutrition and diet have not yet been proved to have a definite rheumatic predisposing power. Conditions of great poverty, destitution, underfeeding, overcrowding and excessive dirtiness do not seem to have an influence specifically toward rheumatic infection. Nearly two thirds of rheumatic cases come from damp rooms—ample confirmation of the traditional association between rheumatism and damp. Is this the missing factor?

PARIS

(From Our Regular Correspondent)

July 28, 1926.

A Medical Club

Paris is to have a Foyer médical, or medical club, after the manner of London, Stockholm and Copenhagen. The location has already been chosen; the work of organization is about completed, and the dedication has been tentatively set for Oct. 15, 1927. The foyer will occupy the second floor of a magnificent private mansion located on Avenue d'Iéna and facing the square in the center of which stands the statue of Washington. The mansion was formerly owned by Prince Roland Bonaparte, who died three years ago and who was a great lover of the sciences. He had accumulated in this residence a fine zoological collection, using his vast fortune for that purpose. He bequeathed his collection to the Muséum d'histoire naturelle, and his mansion was purchased by the Société du canal de Suez. The first floor of the mansion is occupied by the Société de géographie. The second floor, with two terraces, affording an admirable view of the Seine and of Paris, will be occupied by the Foyer médical. The quarters have been leased by the society organizing the movement for a period of eighteen years. The capital stock is in the form of 100 franc bonds bearing 6 per cent interest, and is placed solely in the hands of physicians and pharmacists.

This is not the first time that the idea of a foundation of this kind has taken shape. In 1900, the medical club of Paris, located on Avenue de l'opéra, was established, but it was discontinued at the end of two years, its funds having become exhausted. Other projects launched in its place failed one after another for lack of funds. The fact of the matter is that very few Paris physicians frequented the club médical. Those who desired a recreation center were more inclined to seek out other clubs where they came in contact with Paris society and where they formed acquaintances that would prove useful in building up their clientele, instead of a club where they would meet only confrères and find themselves placed on a plane of equality, whereas the medical profession is divided today into rather sharply demarcated classes proud of their titles—professors, hospital physicians, former hospital interns, and others—where, too, they would run the risk of encountering colleagues with whom they were not on good terms and whom they would prefer to avoid. Physicians from the provinces, stopping in Paris, would sometimes visit the club a first time but, finding no familiar faces, would not come again. Then, too, such a club entails very heavy expense. In France it is customary to count on the games to furnish a large portion of the funds needed for general expenditures, but the club médical had dispensed with games of all kinds.

The new Foyer médical that is being organized thought it advisable to take account of the experiences of the club médical. Then again, it is planned to admit to the foyer not only all the physicians of France and foreign physicians sojourning in Paris, but also the pharmacists and the senior students in the medical schools. There will be show cases for permanent exhibits of instruments and pharmaceutic products, which it is expected will have great advertising value. There will also be lecture rooms, halls for special gatherings, a restaurant, a library, and an information office for physicians from the provinces and from foreign countries. Foreign physicians in possession of a diploma entitling them to practice in their own country will be admitted, but their number will be limited to 400.

The committee on organization has chosen as president Prof. Charles Richet; as vice presidents, Prof. Jean Louis Faure, Professor Goris and Dr. Dopter, medical inspector of the army medical corps; as secretary general, Dr. Monnot, and as treasurer, Dr. Thierry, secretary general of the Association générale des médecins de France. Other members of the committee are Drs. Crouzon, Dartigues, Lardennois, Le Mée, Molinéry, Ménestrel and Noir.

The Sanitary Airplane

The great interest awakened by the sanitary airplane exhibited in the Grand Palais during the "journées medicales" (The Journal, August 14, p. 503) has induced the minister of war to furnish more complete information on the results secured by this new method of transporting the wounded in time of war.

It was toward the close of the recent war that Dr. Chassaing, member of the chamber of deputies, sought to interest the Service de santé militaire in this new method, which was originated by Dr. Reymond, senator of the republic, who was one of the pioneers of aviation in France, and who volunteered his services as an army aviator and was killed by the enemy, while flying, toward the end of 1914. The project advanced but slowly, owing to the interminable discussions before the technical commissions, which took a long time in deciding on the best model for a sanitary airplane. The Morocco campaign served to speed up their decisions. In that rugged country, which has few roads and only a single line of railway, care of the wounded in battle is a difficult problem. At the beginning of the Riffian war, the French troops were distributed in small commands over a large area, occupying isolated blockhouses, often with no other medical personnel than a male nurse. Men severely wounded could be given no adequate medical care, and their evacuation to sanitary centers could be accomplished only by commissary trucks returning empty, which were often attacked on their return by the Moroccans, or, at best, the unfortunate wounded men were subjected to a terrible jolting, which caused great suffering. But many airplanes were used in that war, and that was the most useful branch of the service in Morocco, especially since the Moroccans had no planes themselves. The airplanes soon came to be used to pick up and transport the gravely wounded. In one instance the surgeon was transported by airplane. Dr. Tuffier flew to the assistance of General Puymiro, who was severely wounded in the chest and unable to be moved without great risk.

At first large planes of the Bréguet type, weighing (empty) 1,112 Kg. and with a loading capacity of 2,000 Kg. and a 200 horse power engine, were employed. The cabin could accommodate three wounded men, two seated and one reclining. But planes of this type require large fields for the take-off and for landing, which could not always be found in the campaign area, especially in the hilly regions. The Service de santé adopted therefore a new and much lighter type of machine, the Hanriot plane, which can transport only one wounded person reclining, but the introduction of the litter, owing to a long extension plate, is much easier than in the Bréguet type of machine, which has only a narrow opening in the side, as in ordinary passenger planes. The Hanriot sanitary plane H. D. 14 is equipped with a Rhone motor of 80 horse power. Its length is 10.26 meters, its carrying surface is 39.9 meters, its weight (empty) 535 Kg., or, when loaded to full capacity, 790 Kg. Its speed is 115 kilometers; its *plafond* is 4,000 meters. It can take off and land in a very small field, and this advantage, which is important in rugged regions such as the Riffian mountains and the hills of Djebel Hauran in Syria, compensates for the fact that only one wounded man can be transported in it. The Bréguet plane can land only in large level areas prepared in advance, which may be far away from regions in which small commands are operating. The Hanriot plane can land almost anywhere, near to the combatants, and the litter with the wounded man can be put into the plane in a few seconds. In Syria, the Hanriot plane was used to relay the wounded to the larger Bréguet plane. There are now in service in Syria eight Bréguet and eight Hanriot planes, and in reserve two Bréguet and two Hanriot planes. In Morocco there are twenty Hanriot and twenty-eight Bréguet planes in service and seven Bréguet and six Hanriot planes in reserve.

STATISTICS OF THE ARMY MEDICAL DEPARTMENT

In 1920, in the Army of the Levant, eighty-two wounded men, isolated at Aintab post, were evacuated by Bréguet planes. In 1921, more than 150 wounded men from the forces operating on the Euphrates were transported in less than two hours over the 250 kilometers that separated them from Aleppo. In Morocco, in October, 1921, eighteen severely wounded men were evacuated in thirty-six minutes, by means of six planes grouped *en escadrille*, a distance of 80 kilometers, whereas ordinary means of transport would have required three days. Furthermore, most of the wounded men would certainly have died during the transportation. In 1923, in the Atlas Mountains, more than 700 wounded men were evacuated by airplane to the hospitals at Meknès, Fez and Casablanca. The distances traversed ranged from 80 to 560 kilometers. Some days veritable convoys were arranged, as many as twenty Bréguet planes being grouped together in a flight. Seventy wounded men were evacuated on one day and fifty-one on the day following. In 1925, 987 flights with wounded men were made in Morocco and 118 in Syria. From 1920 to the end of 1925, more than 3,000 evacuations of wounded men were made by plane in Morocco and Syria, all without an accident. There has been only one accident thus far in 1926.

Only those with serious wounds of the abdomen, thorax or cranium, or with multiple fractures, for whom surgical intervention was urgent, have been thus evacuated. The transportation by ordinary means would likely have proved fatal. In a European war this mode of evacuation would be reserved for the classes just described, for evacuation by automobiles and by sanitary trains would be possible, owing to the fact that the conditions would be more favorable than in the colonial wars.

BERLIN

(From Our Regular Correspondent)

July 24, 1926.

The Retirement of University Professors

As a result of the provision contained in the new federal constitution to the effect that government officials, clerks and employees must be pensioned at the age of 68, at the latest, many head professors of the medical faculties, who had reached the age limit, have been retired. Professors who had not felt that they needed to be pensioned as yet have complained bitterly of their enforced retirement. It may be that many of these were perfectly able to carry on for some time longer, but, in general, when the age of 68 has been reached it is time for younger men to take the helm. In Germany, enforced retirement on attaining a certain age is all the more justified for two reasons: (1) During the war, many professors aged more rapidly than normally, and (2) during the war, fewer promotions were made, and there is consequently a larger number in the oncoming generation awaiting openings. One thing that makes the pensioning of head professors more endurable is the fact that it affects only the management of institutes, clinics, and the like. Otherwise, pensioned professors are entitled to continue holding their lectures; they remain members of the faculty and receive also the entire salary and lecture fees that they collect from students. During recent years, the aforementioned retirement regulation has brought about many changes in the medical faculty at Berlin and elsewhere.

At the University of Berlin the following head professors of the medical faculty have been retired: Rubner, the physiologist, and Hans Virchow, the anatomist. At the end of this semester, F. Kraus and Goldscheider (internal medicine clinics); F. Strassmann, legal medicine, and Williger, dentistry, will be pensioned. As the post left vacant by the death of Hofmann, physiologist, must be filled, and an occupant for the chair of pharmacology must be found, there are six professorships awaiting new incumbents. It is the general opinion that Kraus will probably be succeeded by his former pupil von Bergmann of Frankfort-on-the-Main, the son of the famous surgeon, now deceased. As to the successor of Goldscheider, the outcome is not as yet certain. One prominent candidate is Professor Umber, director of the Charlottenburg Municipal Hospital, who has made a name for himself in the field of diseases of metabolism—more particularly by his excellent textbook.

Colored Photographs and Films of Operations

Until recently we have had to rest content with photographs in black and white or have had to resort to colored drawings of operations. In the former, the color was lacking, which is exceedingly important in a medical picture, while in the latter the color is present but the richness of detail and the exactness of the photograph are wanting, especially since the artist, on account of the rapid changes in the operative picture, is obliged to work chiefly from memory. The invention of the colored photograph, however, has made possible the production of pictures that combine the exactness of photographs with the naturalness of the colors. The long period of exposure was, however, a great disadvantage. Plates for color photographs must be exposed from fifty to sixty times longer than ordinary dry plates of normal sensitiveness, because the light passes through not only the color filter of the plate but also the yellow disk that is placed in front of it. Short-exposure photographs on color plates are possible, therefore, only under the most favorable light conditions and by the use of a very strong objective. Photographs of operations, however, if they are to show the details sufficiently clearly, must not be too much reduced in size; therefore, an objective with a long focus, which can be so regulated as to secure sharpness of outline, must be used. Operations in the open air and in the bright sunlight are impossible, but even under such conditions an exposure of fifteen seconds would be required, while in an operating room, even though it were as brilliantly illuminated as a photograph gallery, sixty seconds exposure would be needed. Exposure periods of such length are out of the question in photographing operations in which every second is valuable. One must resort therefore to artificial light and endeavor to produce on the operating table a degree of illumination so far exceeding the brightest sunlight that the exposure period can be reduced to a few seconds. The conditions have been met by the gas-filled high-power incandescent lamp. The colors of the light that is produced are such that the use of a yellow filter is superfluous. In the former the period of exposure has been reduced to one seventh of what it was formerly and makes gas-filled incandescent lamps much superior to the arc lamp, in using which, a yellow filter is needed the same as in daylight photography.

Dr. von Schubert, a physiologist in the Women's Clinic of the Charité Hospital, Berlin, has succeeded in producing colored photographs of gynecologic operations with the short exposure of from one to two seconds, although the quantity of light passing through the objective was reduced to one seventh in order to secure the proper sharpness of outline. As the source of light he used an Osram-Nitra 5,000 watt lamp, which had a maximum light power of 10,000 candles. By means of a reflector the light is thrown on a series of mirrors placed at an angle of 45 degrees, from which it is directed to the operating table, by which method an illumination equal to 250,000 light units is secured. That is from two and one-half to five times as strong a light as would be possible to obtain by the use of daylight, for a surface illuminated by the sun presents, varying with the angle of incidence of light rays, an illuminating power of from 50,000 to 100,000 light units.

"Agfa" plates, 9 by 12 cm. in size, are employed, since only with these can one dispense with the yellow disk in working with Nitra light. The photographs produced excite admiration on account of a perfectly natural coloring and a clearness of the minute details. For example, one can clearly distinguish the course of the smallest blood vessels in the organs exposed by the operation; also the structure of ulcers and the like. These colored photographs, of which a considerable number have been produced, may therefore be regarded as excellent examples of color photography. The described equipment will serve for preparing colored films of operations. Dr. von Schubert uses for this purpose the Horst method. Special films for color photography after the manner of the special plates with which the colored picture is secured by single exposure have not yet been produced, so that it is still necessary to prepare three partial pictures. By the Horst method, the three partial negatives are taken simultaneously, although only one objective and only one film strip are employed. By means of three small mirrors placed before the objective the picture rays coming from the object to the photograph are directed into the objective, so that three congruent pictures result, which are placed one after the other on the film strip, being illuminated simultaneously through a red filter, a green filter and a blue filter, respectively. After every exposure, therefore, the film must be advanced three picture lengths. Although each partial picture receives only a third of the available light quantity and although that third is further diminished by the color filter, the light power produced by means of the 5,000 watt lamp has been found sufficient, with an exposure of only one thirty-second of a second, as is required for film photographs, to secure amply exposed partial negatives. For these color film photographs an objective with a short focus and high light power is used, which gives the picture sufficient sharpness of outline without darkening.

Through a telescope the photographer observes the course of the operation, and when the phase of the operation that is to be photographed begins, he sets the cinematograph in motion by the turn of a switch, while an electric motor does the cranking.

In projecting the colored film on the screen, an apparatus is used which superimposes the three partial pictures one over the other and introduces the necessary complementary filters.

A Shelter for Alcohol, Cocaine and Morphine Addicts

In the Tiergarten district of Berlin, the municipal authorities have established a care-taking center for alcohol, cocaine and morphine addicts. The families of the patient are also provided for in case of need. A physician is the director of the shelter.

Marriages

Harlan P. Mills to Mrs. Landonia G. Thompson, both of Phoenix, Ariz., at San Bernardino, Calif., June 28.

Victor S. Randolph, Phoenix, Ariz., to Miss Claire Tatum of Dallas, Texas, July 28.

Frances E. Giles, Ripley, Miss., to Mr. Marius Mannik, Los Angeles, May 16.

Ronald LeRoy Ross to Miss Gertrude M. Hummer, both of Akron, Ohio, May 15.

Albert L. Lash to Miss Mildred Pikowsky, both of Chicago, August 8.

Deaths

George Reeves White ⊕ Savannah, Ga.; Columbia University College of Physicians and Surgeons, New York, 1891; in 1909 served as a member of the House of Delegates of the American Medical Association; Spanish-American War veteran; formerly part owner and chief of staff of the Park View Sanitarium; aged 60; died, July 1, at Pasadena, Calif., of tuberculous enteritis.

Charles Roscoe Luce ⊕ Washington, D. C.; Georgetown University School of Medicine, Washington, 1885; formerly professor of medicine at his alma mater; at one time on the staffs of the Providence Hospital and St. Ann's Infant Asylum; served during the World War; aged 63; died suddenly, July 17, at his summer home in Gloucester, Mass., of cerebral hemorrhage.

John Duncan Quackenbos ⊕ New York; Medical Department of Columbia College, New York, 1871; member of the New Hampshire Medical Society; professor emeritus of rhetoric, Columbia University; author of "History of the English Language," and a "Text-Book on Physics"; aged 78; died, August 1, at his summer home at Lake Sunapee, N. H.

Raymond Hubert Gaynor Laub, Brooklyn; Long Island College Hospital, Brooklyn, 1909; member of the Medical Society of the State of New York; superintendent of the Greenpoint Hospital; aged 42; died, August 1, at the Flower Hospital, New York, of injuries received in an automobile accident.

John M. Parrington, Emporia, Kan.; Medical College of Indiana, Indianapolis, 1898; member of the Kansas Medical Society; formerly chairman of the city board of health, and the Associated Anesthetists of the United States and Canada; aged 57; died, May 16, of cerebral hemorrhage.

Charles Rockwell Payne ⊕ Wadhams, N. Y.; Cornell University Medical College, New York, 1906; formerly consulting physician and lecturer at the Champlain Valley Hospital, Plattsburg; at one time secretary of the Essex County Medical Society; aged 45; died, July 30.

Howard Wilfred Cleasby ⊕ Lancaster, N. H.; Dartmouth Medical School, Hanover, 1913; member of the American Psychiatric Association; served during the World War; on the staff of the Lancaster Hospital; aged 34; died, July 15, of Vincent's angina.

Lewie Allen Griffith, Columbia, S. C.; Kentucky School of Medicine, Louisville, 1887; at one time a druggist; formerly mayor of Columbia; Spanish-American war veteran; aged 60; died, July 17, of pneumonia, following injury and infection of the scalp.

James Harvey Whitcraft ⊕ Wilkinsburg, Pa.; Johns Hopkins University Medical Department, Baltimore, 1910; served during the World War; aged 43; on the staff of the Columbia Hospital where he died, July 22, following an operation.

Gid Malcolm Hall, Lenoir City, Tenn.; Chattanooga Medical College, 1906; member of the Tennessee State Medical Association; served during the World War; aged 43; died, July 22, at Parrottsville, of a self-inflicted bullet wound.

Bernard Simon Talmey, New York; University of Munich, Germany, 1892; member of the Medical Society of the State of New York; formerly on the staff of the Metropolitan Hospital; aged 64; died, June 30, of bronchopneumonia.

Joshua W. Coakley, Creston, Iowa; Bennett Medical College, Chicago, 1883; Barnes Medical College, St. Louis, 1893; member of the Iowa State Medical Society; aged 71; died, July 16, at the Greater Community Hospital.

John H. Allingham, St. John, N. B., Canada; McGill University Faculty of Medicine, Montreal, Que., 1910; on the staffs of St. John County Hospital, East John, and St. John Public Hospital, where he died, June 3, aged 39.

Oscar Samuel Hoffman, Omaha; Bellevue Hospital Medical College, New York, 1876; member of the Nebraska State Medical Association; on the staff of the Wise Memorial Hospital; aged 70; died, July 23, of heart disease.

Oscar T. Peterson ⊕ Minot, N. D.; University of Illinois College of Medicine, Chicago, 1895; on the staffs of the Trinity and St. Joseph's hospitals; aged 60; died, July 17, at a local hospital, of cellulitis and nephritis.

Robert Eugene Wine, Nokesville, Va.; University of the South Medical Department, Sewanee, 1900; member of the Medical Society of Virginia; aged 49; died, March 15, at Washington, D. C., of chronic nephritis.

Joseph Moore Soniat, New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1889; for nearly twenty years a member of the city board of health; aged 59; died, July 26, of heart disease.

William Horace Bennett ⊕ Paris, Ark.; University of Arkansas Medical Department, Little Rock, 1895; past president of the Logan County Medical Society; aged 59; died, July 18, following a long illness.

Andrew Adolphus Henske ⊕ St. Louis; Washington University School of Medicine, St. Louis, 1875; New York University Medical College, 1877; aged 75; died, July 17, of carcinoma of the bladder.

Edgar Stanley Cristman, Barron, Wis.; Milwaukee Medical College, 1902; member of the Wisconsin State Medical Association; served during the World War; aged 48; died, July 20, of heart disease.

Thomas Northen, Lineville, Ala.; Atlanta Medical College, 1878; member of the Medical Association of the State of Alabama; aged 80; died, March 1, at West Palm Beach, Fla., of mitral regurgitation.

Silas S. Thompson, Washington, D. C.; Howard University School of Medicine, Washington, 1904; served during the World War; aged 46; died, July 24, at Freedmen's Hospital, of cardiorenal disease.

George Thurston Spicer ⊕ Providence, R. I.; Medical School of Harvard University, Boston, 1903; formerly on the staffs of the Rhode Island and Providence Lying-In hospitals; aged 52; died, July 26.

Charles Francis Fleming, West Rutland, Vt.; University of Vermont College of Medicine, Burlington, 1915; member of the Vermont State Medical Society; aged 33; died, June 10, of acute nephritis.

Francis Edward Drumheller, Sunbury, Pa.; Jefferson Medical College of Philadelphia, 1886; member of the Medical Society of the State of Pennsylvania; aged 62; died, April 13, of heart disease.

Gerald Louis McGonigle, Frankfort, Kan.; University Medical College of Kansas City, 1913; member of the Kansas Medical Society; aged 36; died, June 27, of acute dilatation of the heart.

Jesse B. Stone, Brookshire, Texas; University of Louisville (Ky.) School of Medicine, 1887; aged 67; died, May 15, at the Central Texas Hospital, Brownwood, of cerebral hemorrhage.

William Montgomery Sweney, Red Wing, Minn.; Bellevue Hospital Medical College, New York, 1876; health officer of Red Wing for many years; aged 76; died, June 1, of chronic nephritis.

Charles H. Venn, Chicago; Rush Medical College, Chicago, 1876; formerly professor of anatomy at his alma mater; aged 83; died, July 22, of cerebral hemorrhage and arteriosclerosis.

S. George Hermance, Clarkson, N. Y.; New York Homeopathic Medical College, 1883; for twenty-five years health officer of Clarkson; aged 71; died, July 26, of cerebral hemorrhage.

George Cairnes, Mount Brydges, Ont., Canada; Trinity Medical College, Toronto, 1897; aged 63; died, recently, at the Victoria Hospital, London, of carcinoma of the pancreas.

Gabriel S. Felder, Memphis, Tenn.; Medical Department of the Tulane University of Louisiana, New Orleans, 1885; aged 65; died, April 2, of lobar pneumonia and influenza.

Abram E. Vineyard, Comanche, Texas; Atlanta Medical College, 1891; member of the State Medical Association of Texas; aged 70; died, April 12, of chronic myocarditis.

Lena Vaughn Ingraham, Cambridge, Mass.; Woman's Medical College of Pennsylvania, Philadelphia, 1883; member of the Massachusetts Medical Society; died, July 16.

Seymour S. Richards, Frankfort, N. Y.; New York University Medical College, 1883; member of the Medical Society of the State of New York; aged 65; died, July 18.

James John Collie ⊕ Geneva, N. Y.; Long Island College Hospital, Brooklyn, 1889; served during the World War; aged 60; died, July 28, of cerebral hemorrhage.

Henry Altshul, Hartford, Conn.; Medical Department of Columbia College, New York, 1887; aged 62; died, May 21, of lobar pneumonia and chronic myocarditis.

Charles Harlan Callender, Windsor, Conn.; Albany Medical College, New York, 1889; aged 59; died, June 3, at the Hartford (Conn.) Hospital, of appendicitis.

John D. Rucker, Cleburne, Texas; Vanderbilt University School of Medicine, Nashville, 1883; formerly county health officer; aged 60; died, April 19, at Dallas.

Mark C. Myers ⊕ San Francisco; University Medical College of Kansas City, 1897; aged 64; died, July 16, at American Falls, Idaho, of heart disease.

Walter Franklin Keating, Cleveland; Medico-Chirurgical College of Philadelphia, 1905; served during the World War; aged 47; died, June 29, of pneumonia.

Israel Jones Woodward, Toms River, N. J.; Baltimore University School of Medicine, 1894; aged 56; died, March 18, at the State Hospital, Trenton.

Theodore Franklin Conover, Fort Washington, Pa.; Hahnemann Medical College of Philadelphia, 1879; aged 70; died recently, of cerebral hemorrhage.

Herman Philipp, Wichita, Kan.; University of Berlin, Germany, 1886; aged 63; died, March 23, at Rochester, Minn., of adenoma of the thyroid gland.

Nathaniel King Moxley ⊕ Ironton, Ohio; Miami Medical College, Cincinnati, 1883; aged 66; died, July 24, of paralysis following cerebral hemorrhage.

Francis L. Flanders, Kansas City, Mo.; Chicago Medical College, 1868; aged 82; died, July 30, of arteriosclerosis and chronic interstitial nephritis.

Henry Clay Stevens, Wilmington, Del.; Howard University School of Medicine, Washington, D. C., 1891; aged 59; died, March 9, of endocarditis.

Frank L. Stone, Pendleton, Ind.; Physio-Medical College of Indiana, Indianapolis, 1874; aged 75; died, July 11, of cerebral hemorrhage.

Augustus Peter Dellett, New York; Bellevue Hospital Medical College, New York, 1891; aged 60; died, March 25, of chronic nephritis.

George H. Gildersleeve ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1899; aged 50; died, July 25.

Charles Adelbert Gillin ⊕ New Britain, Conn.; New York University Medical College, 1883; aged 67; died, June 23, of angina pectoris.

John H. Tripp, Togo, Sask., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1898; died, June 26, of angina pectoris.

Harry McK. Stevenson, Baltimore; Altantic Medical College, Baltimore, 1901; aged 47; died, recently, of mitral regurgitation.

George Seely Thompson ⊕ Brooklyn; Dartmouth Medical School, Hanover, 1879; died, in July, at Windham, N. Y., of pneumonia.

Joseph W. Steele, Baltimore; University of Maryland School of Medicine, Baltimore, 1856; aged 95; died, July 16, of senility.

Julius B. Cushman, Derby, Vt.; Illinois Medical College, Chicago, 1896; aged 74; died, April 18, of carcinoma of the intestine.

Joseph Louis Hypolite Martel, Montreal, Que., Canada; University of Montreal Medical Faculty, 1905; aged 47; died, recently.

William Pond Cutler, Highland Park, Ill.; Pulte Medical College, Cincinnati, 1881; aged 67; died, July 31, of heart disease.

John V. Cummings, Dayton, Ohio; Cincinnati College of Medicine and Surgery, 1873; aged 79; died, June 10, of heart disease.

Alfred Oscar Williams ⊕ Ottumwa, Iowa; State University of Iowa College of Medicine, Iowa City, 1875; aged 75; died, May 28.

David R. Moore, Stanley, N. B.; University of Vermont College of Medicine, Burlington, 1879; aged 69; died, in June.

J. P. Carrington, Plainview, Texas (licensed, Texas, under the Act of 1907); aged 72; died recently, of chronic gastritis.

John Franklin Potts, Indianapolis; Louisville (Ky.) Medical College, 1889; aged 62; died, July 26, of angina pectoris.

Victor B. Barcroft, Litchfield, Ill.; Missouri Medical College, St. Louis, 1879; aged 70; died, July 23, of encephalitis.

William A. Connolly, Monroeville, Ind.; Columbus Medical College, 1876; died, July 21, of carcinoma of the liver.

John Richards, Laud, Ind.; Eclectic Medical Institute, Cincinnati, 1871; aged 91; died, July 16, of senility.

Correspondence

"TRACHOMA"

To the Editor:—The term "trachoma" should still be enclosed in quotation marks. Why? Because the diagnosis (?) is still being made only after the eye conditions to which it is being applied have reached an advanced stage. Royer in his plea for the need of epidemiologic research in "trachoma" (*Am. J. Pub. Health* **16**:706, 1926) seems not to have been aware of the epidemiologic, etiologic and therapeutic investigations in "trachoma," extending over more than three years, that the Bureau of Laboratories of the New York City Health Department made, beginning in the spring of 1910 and stopping at the end of 1913. These studies were published in the *Journal of Infectious Diseases* (**14**:261, 1914) and more fully in the Collected Studies of the Bureau of Laboratories, New York City Health Department, volume VII.

In these studies we clearly showed that the reason why opinions differed so much in regard to the cause and course of the conditions included under this name "trachoma" was that no one had reported a minute, comprehensive, individual study of a large series of cases extending over a period of years beginning in the acute stage. This we did and we included in our published report a critical review of the studies on "trachoma" to that date.

We came to the conclusion that the condition known as "trachoma" was caused (in at least the majority of cases studied by us) by members of the group of hemoglobinophilic bacilli (*Hemophylus influenzae, Hemophylus conjunctivitidis,* etc.) It is well known that this group of organisms, starting as excitants of acute inflammation of mucous membranes, may continue to act from the original attack or by repeated attacks, causing chronic interstitial inflammation as chronic sinusitis, laryngeal stenosis or chronic inflammation of the lungs.

Our studies also show plainly that "trachoma" is not as contagious as has been supposed, and that if the acute inflammations of the eyes are properly treated "trachoma" can be prevented.

I claim, in view of these studies, that there is less necessity for money to be spent on epidemiologic studies of "trachoma" than there is for money to be spent in treating all acute eye conditions and in teaching people how to care for their eyes. Of course, under existing conditions, the present chronic cases must also be handled; but if the new cases were treated properly the chronic cases would finally disappear.

Anna W. Williams, M.D., New York.

THE BEHAVIOR OF THE PYLORUS

To the Editor:—The editorial on "The Behavior of the Pylorus" (The Journal, July 31) states that "it is currently concluded from roentgen-ray evidence in animals and in man, and from experimental evidence in animals, that the pylorus is normally open at the height of antral contraction and that every antral contraction is normally followed by the discharge of chyme through the pylorus." My experience in a large number of cases is directly contrary to this statement. There is no question about the fact that the pylorus apparently is open at the height of antral contraction, yet it *does not* follow that the pylorus is open at the height of every antral contraction. It is a common occurrence to see four or five peristaltic waves *in succession* complete their cycle at the pylorus without any opaque medium passing through.

Robert A. Arens, M.D., Chicago.

Director, Radiological Laboratories,
Michael Reese Hospital.

"A DISPLAY OF FAKIRISM"

To the Editor:—Just after reading in your issue of July 24, page 269, "A Display of Fakirism," I chanced to read in *L'Illustration* of July 3 a short article on "La supercherie [humbug] du fakirisme." This article, by a French scientist, M. Paul Heuzé, described the demonstration before a body of scientists and journalists in Paris of some of the same acts exhibited by "Dr. Tahra Bey," who had hat pins thrust through his cheeks and across his throat, apparently through the larynx, and who also reclined on the points of nails. Dr. Heuzé insisted that there was no anesthesia in his case. He did not swallow his tongue, go into a cataleptic state or have weights put on.

These phenomena, including apparent death, burial and resurrection, are discussed in one of Robert Louis Stevenson's novels. RICHARD DEWEY, M.D., Pasadena, Calif.

TULAREMIA AND CONJUNCTIVITIS

To the Editor:—The ocular glandular type of tularemia so accurately coincides with the clinical manifestation of Parinaud's conjunctivitis in its local and general symptoms and clinical course as to suggest that Parinaud's conclusions were well founded when he contended that the infection was of animal origin. Two cases of tularemia that I recently reported at the meeting of the Montana State Medical Association are so accurately described in de Schweinitz' textbook under the heading Parinaud's Conjunctivitis as to leave little to be added in a description of these cases.

Positive blood findings as reported from the Hygienic Laboratory in Washington conclusively established the etiologic factor as that of tularemia.

W. R. MORRISON, M.D., Billings, Mont.

Queries and Minor Notes

RAY AND LIGHT THERAPY IN OTOLARYNGOLOGY

To the Editor—Have you any information on the comparative value in end-results of tonsillectomy and ultraviolet-ray treatment (as with Kromayer or similar lamps)? Also comparative value of ultraviolet ray or quartz light therapy in acute conditions of the nose and throat as compared with generally accepted medical treatment? Are the light treatments out of the experimental stage?

B. M. JEWELL, M.D., Danville, Ill.

ANSWER.—For infection of the tonsils, the best treatment is still complete removal. It is true that ultraviolet radiation may for a few hours or a day overcome infection of the contents of the tonsillar crypts. When the infections recur, the patient suffers from the same symptoms as before.

Violet ray and quartz light therapy have not been scientifically established as of great value for conditions of the nose and throat, as compared with the generally accepted medical treatment. It is asserted by some that the application of ultraviolet radiation hastens recovery from some of the acute infections. Most acute conditions are, however, self-limited, so that no treatment should be given too much credit.

With every new type of treatment, especially along the line of mechanical or physiotherapy, some investigators become overenthusiastic and report glowing results. As time elapses, it is found that most of these measures give some relief to a small percentage of patients but fail entirely in many others.

DILATED VENULES ON CHEST

To the Editor:—Will you kindly inform me of the diagnostic significance of a ribbon-like line of dilated venules following the costal margin to the sternum in a person with some abdominal distress? Please omit my name.

M.D., Michigan.

ANSWER.—A ribbon-like band of dilated venules about the chest approximately at the diaphragm is significant of a compensatory circulation having been established following obstruction to the venous flow from the lower half of the body, usually in the inferior vena cava, particularly if associated with other signs. The frequent presence of this isolated phenomenon in apparently normal persons indicates that it may mean little or nothing.

PREVENTIVE INOCULATION AGAINST RABIES

To the Editor:—1. What advantage, if any, is there in using the graduated doses of twenty-one to twenty-five injections of rabies vaccine over the fourteen doses of equal strength? 2. How long does the immunity to rabies last after the injections are completed?

H. E., M.D., Iowa.

ANSWER.—1. There is no especial advantage in the use of the treatment requiring a considerable number of doses over that in which a smaller number are employed. Within recent years the killed virus has to a very considerable extent replaced the attenuated virus. A number of modifications of the Pasteur treatment are licensed by the Treasury Department under the law of July 1, 1902, and all are considered to be safe and effective.

2. The duration of immunity in man after a series of antirabic injections is unknown; while no general rule can be given, it is generally advised that an exposure to rabies more than six months after completion of a course of treatment should be followed by a new course of the prophylactic.

ANTIRABIC TREATMENT

To the Editor:—We are interested in securing comparative information regarding the relative value (clinical) of the antirabic human (Pasteur treatment) and the Sir David Semple fourteen dose treatment; and would appreciate also your giving us information as to where we could secure literature as to the technic of manufacture of the Sir David Semple method. We are at present using the Pasteur method, and we also are thinking of making the Semple treatment, but before doing so we want to be sure regarding its value.

BLUHME RAMOS, M.D., La Habana, Cuba.

ANSWER.—By reports received by the United States Public Health Service, as well as those found in the literature, it is indicated that the Semple fourteen-dose treatment for rabies is as effective in preventing rabies as the Pasteur method. The technic of the preparation of the material can be found in an article entitled "On the Nature of Rabies and Antirabic Treatment" by Sir David Semple (*Brit. M. J.* **2**:372 [Sept. 20] 1919).

ACIDIFIED MILK IN INFANT FEEDING

To the Editor:—I have been reading a great deal with regard to Marriott's success with the use of acidified milks in infant feeding, and he claims marked success with such products as cultured lactic milk, especially in cases that showed a definite acid deficiency. Granting this be true, why wouldn't dilute hydrochloric acid be of benefit in such cases, given in the feeding formula, and thereby saving a great expense by not having to buy milks of this sort put up by the manufacturers? Granting that hydrochloric acid could be used with advantage in this respect, what amount might one use and still stay within the bounds of therapeutic safety?

LESLEY E. WALLACE, M.D., Thebes, Ill.

ANSWER.—Acidified milk has been given a rather extensive clinical test during recent years. At present it is quite generally used and seems a valuable addition to our methods of infant feeding. Originally it was prepared by churning sour milk; later cultures of acid producing bacteria (*B. bulgaricus* or *B. acidophilus*) were added to sterilized sweet milk; more recently a given amount of acid has been added instead of the acid producing bacteria culture.

The good clinical results stimulated investigation as to the action and digestion of such feedings. The work of Marriott (*Am. J. Dis. Child.* **26**:542 [Dec.] 1923), in which he studied the acidity of the gastric contents of infants fed on human milk, cow's milk and acidified milk, among others brought out the following points: The normal infant, breast fed, at the height of digestion has a gastric acidity of about p_H 3.75. Infants suffering from infection and nutritional disturbances have a distinctly lower acidity of the gastric contents. Infants fed on sweet cow's milk mixtures have a lowered gastric acidity. This results from the "high buffer" value of cow's milk, by which one means that cow's milk is capable of neutralizing a considerable portion of the gastric acidity. Approximately three times as much acid must be added to cow's milk as to breast milk in order to bring the free acidity of the two to the same point. Marriott advocates feeding milk containing from 0.5 to 0.7 per cent of lactic acid. Such a milk and breast milk have a similar hydrogen ion concentration when equal amounts of hydrochloric acid are added to each. It is interesting to find that when sweet cow's milk is soured with lactic acid forming cultures, the growth of the bacteria is inhibited when the acidity reaches from 0.5 to 0.7 per cent.

Faber (*Am. J. Dis. Child.* **26**:401 [Nov.] 1923) reported on the acidification of cow's milk with hydrochloric acid. This diminishes the "buffer" and is equivalent to increasing the hydrochloric acid present in the stomach. He raised the question as to the advisability of using an inorganic acid that is not completely oxidized in the body and thus throws a strain on the acid-base regulating mechanism. Lactic acid, on the other hand, is an organic acid and, while neutralizing the "buffer" of cow's milk, is completely oxidized. Hydrochloric acid milk would seem advisable in certain cases of hypochlorhydria, and in certain cases of malnutrition and celiac disease. Its use is not advisable for any considerable period—from two to four weeks at most. Lactic acid milk may be fed an indefinite time.

Milk acidified by lemon juice as recommended by A. F. Hess (The Journal, May 17, 1924, p. 1604) should be mentioned. Such a milk has a lowered "buffer value" and may be fed an indefinite period. In addition, it supplies antiscorbutic vitamin, which is deficient in cow's milk. The general use of lemons, with the ease of obtaining and safety, is advantageous.

The use of commercial lactic acid milk must be left to the discrimination of the physician. There are good products available today that offer the advantages of being well prepared, uniform in quality, and convenient for the mother to use. The cost is not prohibitive, but is a factor to consider in individual instances.

LEUKOCYTOSIS

To the Editor:—I would be pleased to know the most recent view of the production of leukocytosis in infection. Is it apt to be greater in eosinophilia? Holt states that it rises as high as 40,000 in roundworm infestation. I have questioned bacteriologists as to whether there is a relative or actual increase; their replies were almost invariably that the increase was actual, but they could not satisfactorily account for their belief aside from the fact that the figures did not lie. In the normal arterioles the white cells are lined along the intima and erythrocytes in the center of the current. The white cells occupy the wall side because of either chemotactic or complement influence. Now if by reason of infection the attraction is lessened, there will be more white cells released than normal when the blood is drawn into the capillary tube for the count, which would result in an apparent but not real increase. Where do the pus cells come from? I have seen it stated that one third of the feces is composed of bacteria. What are these and have any studies been made of their action on the economy?

Thomas I. O'Drain, M.D., Philadelphia.

Answer.—Our correspondent raises the question whether the leukocytosis occurring in infections is real or only apparent, advancing the hypothesis, for which there is no proof, that white cells may be more readily released from the vessels and hence more drawn into the counting chamber in infectious than in normal conditions. There is no question that the total number of leukocytes in the circulating blood is increased in infections that exhibit a high leukocyte count, for if sections from different tissues and organs throughout the body are examined under the microscope in cases with a high leukocyte count it will be found that the blood in the vessels everywhere shows more leukocytes than the blood in corresponding tissues from persons who have died without the high leukocyte count. The pus cells are chiefly the leukocytes which have migrated from the blood vessels at a point of local suppuration. In conditions accompanied by leukocytosis there is apparently an increased release of leukocytes from the tissues that form them, especially the bone marrow, and also an increased actual formation of leukocytes.

The fecal bacteria are chiefly those that have grown in the alimentary canal and are of many sorts. Extensive studies have been made of these bacteria. See Kendall's Bacteriology, Lea and Febiger; also "The Intestinal Flora," by Rettger and Cheplin, Yale University Press.

BEFSAL

To the Editor:—Have you any data regarding the composition and therapeutic value of "Befsal"? It is marketed by the supposed inventor, Dr. S. Lewis Summers, Ambler, Pa., and rather extravagant claims are made for it.

S. E. A., M.D., Albany, N. Y.

Answer.—The absurd and ludicrous claims made for Befsal were discussed in The Journal, Feb. 21, 1925, p. 611. The claimed chemical composition of the product and the product itself both may be described as "crude."

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

American Board for Ophthalmic Examinations. Colorado: Denver, Sept. 13. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago

American Board of Otolaryngology. Colorado: Denver, Sept. 13 Sec., Dr. H. W. Loeb, 1402 So. Grand Blvd., St. Louis, Mo.

Arizona: Phoenix, Oct. 5. Sec., Dr. W. O. Sweek, Phoenix.

Colorado: Denver, Oct. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Florida: Tallahassee, Oct. 12-13. Sec., Dr. William M. Rowlett, Box 603, Tampa.

Georgia: Atlanta, Oct. 12-14. Sec., Dr. C. T. Nolan, Marietta.

Idaho: Boise, Oct. 5. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

Illinois: Chicago, Oct. 5-7. Supt., Regis. and Education, Mr. V. C. Michels, Springfield, Ill.

Iowa: Des Moines, Oct. 12-14. Commissioner, Dept. of Health, Dr. Don M. Griswold, Des Moines.

Kansas: Topeka, Oct. 12. Sec., Dr. Albert S. Ross, Sabetha.

Michigan: Lansing, Oct. 12-14. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

Minnesota: Minneapolis, Oct. 5-7. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

Montana: Helena, Oct. 5-7. Sec., Dr. S. A. Cooney, Helena.

New Hampshire: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.

New Mexico: Santa Fe, Oct. 11-12. Sec., Dr. W. T. Joyner, Roswell.

New York: Albany, Buffalo, New York and Syracuse, Sept. 20-23. Chief, Professional Exams. Bureau, Mr. Herbert J. Hamilton, State Education Building, Albany.

Oklahoma: Oklahoma City, Sept. 14-15. Sec., Dr. J. M. Byrum, Shawnee.

Rhode Island: Providence, Oct. 7-8. Sec., Dr. B. U. Richards, Providence.

Utah: Salt Lake City, Oct. 5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

Wisconsin: Basic Science Board, Madison, Sept. 18. Sec., Dr. M. F. Guyer, University of Wisconsin, Madison.

Wyoming: Cheyenne, Oct. 4-6. Sec., Dr. G. M. Anderson, Cheyenne.

NEW ANATOMY BUILDING OF THE UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE

The University of Tennessee has adopted a building program for the construction of a group of buildings in Memphis that will be adequate to house the colleges of medicine and dentistry, the schools of pharmacy, public health, nursing and social welfare, and the department of extension health service. When completed, the buildings will form a quadrangle, which will be located on the block south of the present medical school site.

Anatomy building of the University of Tennessee College of Medicine.

The only building of the group at present completed is the six story anatomy building, which is 180 by 60 feet and, as shown in the illustration, is built in a modified Tudor-Gothic style, fireproof in construction and surfaced with brick with stone trimmings.

The building provides laboratory and lecture space for the instruction of students in gross and microscopic anatomy, physiology, pharmacology and chemistry. Physiology and pharmacology will occupy half of the first and all of the second floors. The department of chemistry will occupy the third and half of the fourth floors. The other half of the fourth floor will be occupied by the department of microscopic anatomy. Space for embalming and storing anatomic material occupies part of the first floor. The department of gross anatomy will occupy the entire fifth floor. The sixth floor is given over to the animal house.

The departments are provided with spacious students' laboratories, which are located at the ends of the building and so receive light from three directions. Each member of the staff also is provided with a private laboratory and office.

COLUMBIA-PRESBYTERIAN MEDICAL CENTER

WILLIAM DARRACH, M.D.
Dean, Columbia University College of Physicians and Surgeons
New York

Marked progress has been made in the construction of the new buildings for the Presbyterian Hospital and the College of Physicians and Surgeons. The land available for this project extends north and south from One Hundred and Sixty-Fifth Street to One Hundred and Sixty-Eighth Street and from Broadway on the east to a line 200 feet to the west of Riverside Drive. This plot of ground consists of two portions, the larger and more easterly one being on a plateau about 180 feet above the river, and the smaller westerly one on a level with Riverside Drive. The upper portion is divided by Fort Washington Avenue into two unequal portions. The larger and more easterly is the old American League Baseball ground. The northerly two thirds of this plot is to be occupied by the Presbyterian Hospital and the Babies' Hospital, the School of Medicine and Vanderbilt Clinic, the southern third being reserved for future special hospitals. The northerly portion of the part lying to the west of Fort Washington Avenue will be occupied by the Neurological Institute. To the south of the latter is the Nurses' Residence overlooking the river. On the lower level the State Psychopathic Hospital and Institute is to be erected at the northerly portion east of Riverside Drive. The lower ten stories with wings projecting to the west provide wards and small rooms for psychopathic patients, with approximately 200 beds. The central portion rises as a tower above the upper plateau, where it will be in close proximity with the Neurological Institute. This tower will contain the library, laboratories and classrooms. The buildings for the Vanderbilt Clinic and the Medical School balance each other on either side of a central wing which will contain entrance hall, administrative offices, library and amphitheaters. The northerly wing of the medical school building contains the major teaching laboratories for the various departments, the research rooms and other facilities, running on an east and west axis. At first only five floors of the Vanderbilt Clinic section are to be built. It is expected that later on this will be extended to the full height to give additional space to the clinic and to house clinical facilities for the school of dentistry.

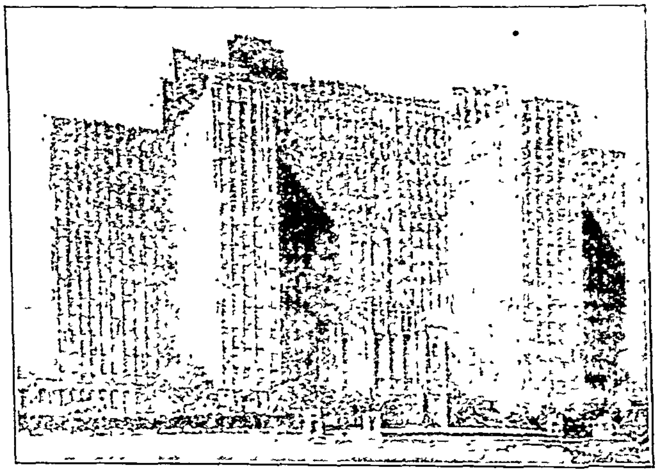
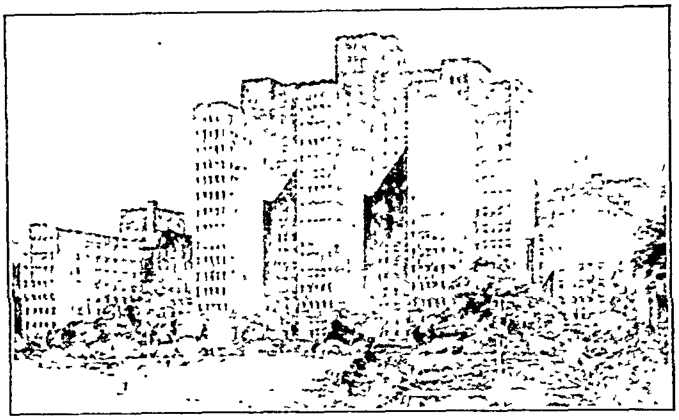


Fig. 1.—Northern view of the first group of Medical Center buildings from West One Hundred and Sixty-Eighth Street: College of Physicians and Surgeons (right), entrance and outpatient department (left) as it will appear fully expanded and with the School of Dentistry included.



Harkness Pavilion. Presbyterian Hospital. Babies' Hospital.

Fig. 2.—Southern view of the first group of Medical Center buildings from One Hundred and Sixty-Fifth Street.

The Presbyterian Hospital is built on an east and west axis with three ward wings projecting to the south. The private pavilion continues the main wings to the east, with a fourth wing projecting to the south. Seven stories of the latter have been erected but so planned as to allow an additional six stories when necessary. In the main hospital, in addition to the basement containing kitchens and other service facilities, there are two floors for permanent housing and ten ward floors. It is planned to use two of these floors for temporary housing. In addition to the floors devoted to medicine and surgery there will be one floor for the urologic clinic and two and one-half floors for the Sloane Hospital for Women.

The steel walls and floors have been completed for the hospital and the medical school, and excavation for the Presbyterian Hospital School of Nursing. Construction will soon commence for the erection of this building and also for that of Vanderbilt Clinic and the emergency and receiving portion of the hospital. Excavation for the State Psychopathic Hospital and Institute has commenced.

Arkansas May Examination

Dr. J. W. Walker, secretary of the Arkansas Board of Medical Examiners, reports the written examination held at Little Rock, May 11-12, 1926. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Twenty-one candidates were examined, all of whom passed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
University of Arkansas Medical Department	(1926)	76.2, 77, 78.5, 80.4, 81.2, 81.7, 82, 82.3, 82.5, 82.8, 83.5, 84.2, 84.3, 84.8, 87.1, 92.9, 93.2
Columbia University College of Phys. and Surgs	(1923)	90.8
University of Nashville Medical Department	(1899)	78.7
University of Tennessee College of Medicine	(1926)	83.2, 84.6

Book Notices

Medical Heredity. Distinguished Children of Physicians (United States, to 1910). By William Browning, Ph.B., M.D., Pofessor of Neurology, Long Island Medical College. With an introduction by Charles B. Davenport, B.S., A.M., Ph.D. Cloth. Price, $4. Pp. 250. Baltimore: The Norman, Remington Company, 1925.

In this volume the author has assembled much unusual information leading to certain rather general conclusions. The book is based on the records of 6,500 distinguished children of physicians. From these data the author attempts to answer such questions as concern the intelligence of physicians' children, the handicaps which the sons of physicians must overcome, and the part played by medical environment in mental development. It is difficult to reach any sound conclusion on the basis of the data presented, which are nevertheless of the greatest interest. One of the most interesting points presented is the fact that the distinguished sons of physicians are frequently painters and sculptors, and the distinguished daughters of physicians not unusually authors. It is a striking fact that 846 persons in "Who's Who," out of a total of some 16,000, are the children of physicians.

Die Chirurgie: Eine zusammenfassende Darstellung der allegemeinen und der speziellen Chirurgie. Herausgegeben von Prof. Dr. M. Kirschner und Prof. Dr. O. Nordmann. Lieferung 8. IV. Band. Die Chirurgie des Ohres. Von Prof. Dr. A. Blohmke. Paper. Price, 16 marks. Pp. 359-636, with 182 illustrations. Berlin: Urban & Schwarzenberg, 1926.

In this section, on diseases of the ear, Blohmke of Königsberg conformed to the style and general arrangement set by the writers of the previous portions. The anatomy and physiology of the ear are dealt with, as well as the pathology, semeiology and treatment of the diseases of the ear. This section is simply a part of a surgical system and not an entity. The author has therefore studiously avoided those subjects of general surgical interest not specifically related to the ear which have been allotted to other portions of this system. Judged either as part of a system or as an entity, the book may be highly recommended.

Individual Gymnastics. A Handbook of Corrective and Remedial Gymnastics. By Lillian Curtis Drew, Director of Department of Corrective Gymnastics, Central Branch Y. W. C. A., New York City. Third edition. Cloth. Price, $2.25. Pp. 276, with 121 illustrations. Philadelphia: Lea & Febiger, 1926.

This book emphasizes the individuality, psychology and responsibility of treatment. It contains a short discussion of the anatomy of the spine, skeleton, muscles and ligaments. A thorough consideration of posture is given. In the school hygiene of posture, adjustable seats and desks, the proper writing position, and correction of vision are discussed. The subject of home hygiene, including sleep, meals, food, clothing, teeth, outdoor life, elimination, baths and shoes, is well given. The examination and recording of posture methods are discussed, including the use of the schematograph and the silhouettograph. The grading of posture is described. Under treatment, special exercises are given, including breathing and rib expansion movements. Exercises to increase general and local flexibility are described in detail. There is an interesting chapter on visceroptosis and its treatment by gymnastic measures. The technic of examination of scoliotic patients includes the use of the pantograph, Freiberg's method, the schematograph and the photograph.

Gastric Function in Health and Disease. By John A. Ryle, M.D., F.R.C.P., Assistant Physician and Lecturer on Medical Pathology, Guy's Hospital. Cloth. Price, $2.75. Pp. 152, with illustrations. New York: Oxford University Press, 1926.

This is a reprint in book form of the Goulstonian lectures on the study of gastric function in health and disease, which were delivered at the Royal College of Physicians in March, 1925. The lectures were published serially in the *Lancet* during March and April, 1925, and much of the experimental work had been previously described in *Guy's Hospital Reports.* The first section of the book deals with gastric function in health; the remaining two sections are devoted to gastric function in disease. Throughout the text clinical observations, laboratory tests and experimental physiologic studies are carefully considered in their relation to one another, affording clear, sound and well balanced discussions of very practical nature. The author is partial to the fractional method of analysis of gastric contents; he also emphasizes the importance of the time of the "dyspeptic reaction," immediate or delayed; he further stresses the relation of the "physiologic type" or "gastric habit" of the individual to the gastric function both in health and in disease, and finally develops the fact that whether we are dealing with clinical, radiologic or chemical symptoms and signs, each response expresses merely an exaggeration or depression of a normal reflex.

Les problèmes de la physiologie normale et pathologique de l'os. Par R. Leriche, Professeur de clinique chirurgicale à la Faculté de Strasbourg, et A. Policard, Professeur d'histologie à la Faculté de Lyon. Paper. Price, 28 francs. Pp. 229, with 29 illustrations. Paris: Masson et Cie, 1926.

Dedicated to Leopold Ollier, one of the pioneers of modern physiology of bone, this work deals with the evolution of bone in health and in disease. The authors have collaborated for many years, and the substance of their many joint journalistic articles relating to a great variety of interesting practical topics connected with bone is included in this book. For many years, too, we have been so accustomed to the keen pleasure afforded by the investigations of histologic structure by Policard that little surprise is excited from the excellence of the accounts here of the normal structure, evolution and significance of bone, of the physicochemical basis of ossification, and of the mechanism of resorption of bone. The chapters on the changes in transplanted bone, heterotopic ossification and repair of fractures have great practical value. The thoroughness and critical way in which the literature is reviewed, and the faculty the authors display of abruptly confronting the reader with a realization that at this or that point our knowledge is sharply and definitely limited, produce a wholesome stimulation.

The Technic of Oral Radiography. By Clarence O. Simpson, M.D., D.D.S., F.A.C.D. Cloth. Price, $5. Pp. 207, with 165 illustrations. St. Louis: The C. V. Mosby Company, 1926.

This is a satisfactory presentation of dental radiography in its various phases. It has the merit of being thorough, of ample explanatory detail, and yet not redundant. The illustrating material is of the best, and amply depicts practical applications of the explanatory material. For the student as well as the practitioner in dental roentgen-ray procedure, the work will prove highly instructive.

Allgemeine und spezielle Chirurgie des Kopfes einschliesslich Operationslehre unter besonderer Berucksichtigung des Gesichts, der Kiefer und der Mundöhle. Ein Lehrbuch. Von Eduard Borchers, Professor und Oberarzt der chirurgischen Universitätsklinik Tubingen. Paper. Price, 54 marks. Pp. 382, with 326 illustrations. Berlin: Julius Springer, 1926.

Here is an unusual monograph, as excellent as it is unusual. The first half is devoted to the diagnosis of congenital lesions, injuries, inflammatory conditions, and tumors of the tongue, lips, face, jaws, scalp and skull. In this section injuries to the maxillae, syphilis, and carcinoma constitute the major part. The second half is devoted to anesthesia, particularly local, and to plastic procedures, such as restoration of the nose, lip and jaws, and operations on tongue and palate. There are a number of excellent colored plates of a type rarely seen in American textbooks. The book is worthy of the efforts of a translator who is interested in this subject.

The Diseases of Children. By the late Sir James Frederic Goodhart, M.D., LL.D., F.R.C.P. Edited by George Frederic Still, M.A., M.D., F.R.C.P., Professor of Diseases of Children, King's College, London. Twelfth edition. Cloth. Price, $8.50. Pp. 966, with 68 illustrations. Philadelphia Lea & Febiger, 1926.

The original manuscript, first issued in 1885, has passed through eleven editions, the last appearing in 1921. The book has been reedited with considerable revision by Goodhart's former pupil George Frederic Still. The preface carries the following notations by Still and describes fully the purpose of the work: "I have adhered to the intention of its author, my revered teacher, that the aim of the book should be primarily clinical. Any attempt to cover the numerous advances in physiological and pathological chemistry; or even in chemical pathology, would have added inordinately to the bulk of the book, and, perhaps, have tended to obscure its purpose." As a result of its limited size, many subjects of necessity have been treated briefly. This work can be recommended as an addition of practical value to a general medical library. Such subjects as are considered in greater detail, to a large extent, express clinical studies as developed in English hospitals.

Modern Methods of Feeding in Infancy and Childhood. By Donald Paterson, B.A., M.B., M.R.C.P., Physician for Diseases of Children, Westminster Hospital, and J. Forest Smith, M.R.C.P., First Assistant to the Clinical Unit, St. Thomas's Hospital. Cloth. Price, $3. Pp. 106. New York: Paul B. Hoeber, Inc., 1926.

This little manual is devoted to the essentials of feeding in infancy and childhood by modern methods. The problem is concisely stated, the directions are careful and accurate, and the volume should be accepted as an authentic guide to those who are interested in the feeding problems of infants and young children.

Leçons de pathologie digestive. Par M. Loeper, Professeur agrégé à la Faculté de médecine de Paris. Sixth series. Paper. Price, 22 francs. Pp. 272, with 43 illustrations. Paris: Masson et Cie, 1925.

It is true especially of the diagnosis and treatment of diseases of the digestive organs that careful assembling of the results of examinations in a variety of fields greater than usual is necessary. The isolation and identification of bacteria, microscopic examination of stools and the stomach content, roentgen-ray and chemical examinations as well as tests utilizing methods and apparatus of pure physics are all employed. There is, moreover, great need for careful judgment in estimating the relative importance of the information obtained in these many ways. Editions of the five preceding volumes were quickly exhausted. Of especial interest among the eighteen lectures in the present volume are those concerned in the presence and significance of leukocytes in the gastric juice, demonstration of the secretory activity of the stomach in digesting capsules containing bismuth or other substances opaque to the roentgen ray, syphilis of the stomach, hemorrhages with cirrhosis of the liver, the lessened glycosuria when cirrhosis of the liver is accompanied by ascites, gastric neuritis, multiple generalized cutaneous carcinomas secondary to gastric cancer, and the relation between markedly reducing the cholesterol in the blood and diseases of the liver. The brevity and elegance of diction, and the abundant evidence of thoroughly scientific clinical studies commend this work. It is also refreshing to find "pathology" used in the title with its real significance, when on every hand its usage in the United States is so wrongly applied solely to morphologic alterations, as "the pathology present in this instance" and "there was no pathology of the liver."

The Diagnosis and Treatment of Tuberculosis of the Hip. By G. R. Girdlestone, B.M., F.R.C.S., Hon. Surgeon, Wingfield Orthopaedic Hospital, Oxford. Cloth. Price, $2.50. Pp. 94, with 60 illustrations. New York: Oxford University Press, 1925.

This is an excellent presentation. The material is considered chiefly from a purely clinical point of view. There is an excellent chapter on the mechanics of the hip joint. The author presents what he terms a "comprehensive diagnosis of hip disease." His rules for examination of the patient are simple and complete. He emphasizes the diagnostic value of limitation of movement. He deplores the lack of a complement fixation test for tuberculosis. The technic of examination, early diagnosis and differential diagnosis is presented forcefully. Under treatment, heliotherapy splints and the Jones abduction frame are described. He discusses the position of choice in hip disease. Operation has no place in the treatment in children. Drainage may be necessary in the treatment of sepsis. He discusses arthrodesis and excision operations in adults. This small volume is the best monograph on the subject to date. It is easily read, and the illustrations are excellent. It is recommended to every student, general practitioner and orthopedic surgeon.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

Handbuch der sozialen Hygiene und Gesundheitsfürsorge. Herausgegeben von A. Gottstein, A. Schlossmann und L. Teleky. Zweiter Band: Gewerbehygiene und Gewerbekrankheiten. Dritter Band: Wohlfahrtspflege—Tuberkulose-Alkohol—Geschlechtskrankheiten. Paper. Price, 54 marks each. Pp. 1-816 and 1-794, with illustrations. Berlin: Julius Springer, 1926.

Tremendous consideration of public health activities and medical relations.

Die Narkose in ihrer Bedeutung für die allgemeine Physiologie. Von Hans Winterstein, Professor der Physiologie und Direktor des physiologischen Instituts der Universität Rostock. Zweiter Band—Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tiere. Herausgegeben von M. Gildemeister, et al. Second edition. Paper. Price, 28.50 marks. Pp. 474, with 8 illustrations. Berlin: Julius Springer, 1926.

The physiology of narcosis.

An Atlas of Human Anatomy. For Students and Physicians. By Carl Toldt, M.D. Assisted by Professor Alois Dalla Rosa, M.D. Adapted to English and American and International Terminology by N. Eden Paul, M.D., M.R.C.S., L.R.C.P. Volume 1, first section—A. The Regions of the Human Body; B. Osteology. Volume 2, fourth section—E. Splanchonology. Revised edition. Cloth. Price, $10 per set. Pp. 985, with 1505 illustrations. New York: The Macmillan Company, 1926.

New edition of standard atlas.

Krebsentstehung und endokrines System. Von Dr. Hans Elsner, Facharzt für Magen- und Darmkrankheiten in Berlin. Paper. Price, 5.40 marks. Pp. 100. Berlin: S. Karger, 1926.

A monograph recounting the author's clinical and experimental observations which be believes indicate that cancer is an endogenous disease, dependent on constitutional alterations for which the endocrine system is responsible.

Untersuchungen zur Aetiologie und Therapie des Karzinoms. Von Joseph Schumacher. Paper. Price, 7.20 marks. Pp. 145, with 5 illustrations. Berlin: S. Karger, 1926.

A monograph describing investigations of cancer by a new method for demonstration of lipoids in tissues, which reveals certain structures believed by the author to be of significance in the etiology of cancer.

Brains of Rats and Men. A Survey of the Origin and Biological Significance of the Cerebral Cortex. By C. Judson Herrick, Professor of Neurology, The University of Chicago. Cloth. Price, $3. Pp. 382, with 53 illustrations. Chicago: University of Chicago Press, 1926.

Combined biologic and philosophical presentation of our knowledge of the brain.

Neuere Ergebnisse der Physiologie: In 22 Vorlesungen für Aerzte, Biologen und ältere Studierende. (Eine Ergänzung zu den Lehrbüchern der Physiologie). Von Dr. Phil. et Med. Ernst Gellhorn, a. o. Professor der Physiologie an der Universität Halle, A. S. Paper. Price, 30 marks. Pp. 446, with 113 illustrations. Leipsic: F. C. W. Vogel, 1926.

The newer physiology supplemented to current textbooks.

Health Compendium and Health Publicity. By T. Crew, F.F.I., F.I.H., Clerk to Leicestershire Insurance Committee. Foreword by Prof. A. Bostock Hill, M.D., M.Sc., D.P.H., Chairman of the Health Week Committee of the Royal Sanitary Institute. Cloth. Pp. 260, with illustrations. Leicester: Reader Printing Company, Ltd., 1926.

Guide to public health organizations.

Medicina Fennica, Anno MCMXXV. Edidit Societas Medicorum Fennica Duodecim. Redigenda Curavit Gösta Becker. Paper. Pp. 176, with illustrations. Helsingfors, 1926.

A summary of medical contributions from Finland in English abstract form.

Medical Report of the Hamilton Rice Seventh Expedition to the Amazon, in Conjunction with the Department of Tropical Medicine of Harvard University, 1924-1925. Contributions from the Harvard Institute for Tropical Biology and Medicine, No. IV. Cloth. Pp. 313, with illustrations. Cambridge: Harvard University Press, 1926.

Dystrophien und Durchfallskrankheiten im Säuglingsalter: Ihre Beurteilung und Behandlung mit einfachen Methoden. Wegweiser für den praktischen Arzt. Von Dr. Leo Langstein, Präsident des Kaiserin-Auguste-Victoria-Hauses. Paper. Price, 14 marks. Pp. 207, with 149 illustrations. Leipsic: Georg Thieme, 1926.

Miscellany

MEDICAL PERIODICALS FROM THE LIBRARY STANDPOINT *

CHARLES FRANKENBERGER
Librarian, Medical Society of the County of Kings
BROOKLYN

Medical periodicals comprise probably two thirds of the collections of the larger libraries, in which it is the rule to keep a complete file of all medical literature obtainable.

Because of the attention they require from their receipt as individual numbers until their preparation for binding as complete volumes and placed on shelves as parts of sets for permanent reference, many of the variations and shortcomings in their form and make-up are impressed on us as library workers. These variations are discovered by us in the arrangement of the numbers that go to form volumes and in the collating of the page numbering preparatory to binding; also, after having been bound, by readers looking up references quoted in bibliographies and indexes.

COLLATING

We collate the paging of each unbound volume before binding and again on its return from the binder in bound form. This is absolutely necessary before binding to ascertain whether paging is complete. It affords opportunity to make note of any supplements or other text matter paged separately, or discrepancies or errors in pagination, so that the binder can be given instructions as to the order in which this separately paged material is to be bound in the volume. We all have frequently found instances in which a signature has been duplicated and one omitted. For this reason, the ideal method is to collate all publications, current numbers of periodicals as well as new books, at the time of their receipt. Some libraries do collate their new books as received. We do not know of any that collate the current periodicals as they arrive. While this is desirable, it would mean collating periodicals three times: on their receipt, on preparing complete volumes for binding in case any pages have been cut during course of completion of volume, and again on return from the binder to check whether all pages have been included and properly arranged. The staffs of most of our libraries will not permit of this ideal check up.

To many editors and publishers, the points that I am about to stress are considered unimportant and nonessential. Others probably have not given much thought to these irregularities in form in their publications, and still others whose periodicals are of the local, current or ephemeral class would not consider our suggestions necessary in their case.

While the larger portion of the copies circulated are discarded after having been read by those receiving them, there will always be those sets which are retained for permanent reference in private collections as well as those in the larger, all inclusive medical libraries. The fact that a medical journal existed, whether only one issue, or a few or a series of volumes regardless of its ephemeral or future value, means that it forms a part of medical literature and must be preserved in our all inclusive medical collections, as a record of the printed page of the science of medicine.

In order to illustrate the points to which I am drawing attention, I cite the names of various periodicals. These are used only as representative of the larger group in which similar variations exist, as it is not my purpose to discriminate against any particular publication.

TITLES OF PERIODICALS

The title should be short. *Physical Therapeutics* is the new and welcome change in title of the *American Journal of Electrotherapeutics and Radiology*. In contrast to this two word title might be mentioned the *Archives des maladies de l'appareil digestif et des maladies de la nutrition* and *Berichte über die gesamte Gynäkologie und Geburtshilfe sowie deren Grenzgebiete*. The outstanding advantages of short titles are that they occupy less space and type, thus reducing cost of composition in the numerous bibliographies and indexes in which they are listed, and also in the amount of lettering on the back of bound volumes, reducing cost of binding.

CHANGE OF TITLE

When a change in title is contemplated it should not be made in a volume in the course of publication, but at the beginning of a new volume. In volume 26, the title of the *Pennsylvania Medical Journal* was changed with number 7 to the *Atlantic Medical Journal*. Thus, half the volume was one title and the other half another, making it impossible, bound as one volume, to place it in its alphabetical order on the shelves.

NUMBERING OF SERIES, VOLUME, NUMBER AND DATE OF ISSUE

Each issue should have printed on its front cover and on the first page of text matter the volume, number in volume of that issue, month, day of month if more frequently issued, and year, so that when the volume is bound the beginning of each number can be easily distinguished.

Each volume should begin numbering its first issue with number 1. If a serial number is used, as is the case with the *British Journal of Surgery*, it should be in addition to the individual numbering of the issues of each volume. This makes it easy to recognize the beginning of each new volume.

It is preferable that volumes begin and end in the calendar year. This reduces the lettering on the back of each volume, at the time of binding, from two years (1925-1926) to that of one year, and the double year quotation in bibliographies and indexes. It also makes it more convenient in recording on current periodical record cards and check lists of sets.

Arabic Versus Roman Numbers.—Roman numerals in bibliographies, indexes and reference work should be discontinued, and they should be replaced by Arabic numbers. The fact that Roman numerals are no longer taught in our schools, the slowness with which they are interpreted, and the additional space, type and increased cost of composition in printing are sufficient reasons to warrant this change. This difference is at once apparent if we contrast quoting volume LXXXVIII in Roman numbers, requiring eight figures, in comparison with two in Arabic numerals.

Series Numbering.—The term "series" has been rather indiscriminately used, much to the annoyance of the bibliographer and library worker. For example, the *Edinburgh Medical Journal* completed its first series in 1896, and in 1897 began with volume 1 of a "new series," which ran through twenty-three volumes. In 1908 it began another new series, commencing with volume 1. This should have been indicated as third series, which it properly is. If a request is made, or a quotation is given, without the year, of new series, volume 19, it is not known whether it is volume 19 of the new (or second) series or volume 19 of the new (or third) series that is wanted. In the case of the *Irish Journal of Medical Science*, each year's issues form a new series numerically.

Page Numbering.—It is in this particular phase of periodical publication that we have one of our greatest grievances. In the twelve numbers forming the annual volume of the

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* Read before the Medical Library Association, Ann Arbor, Mich., June 9, 1926.

Proceedings of the Royal Society of Medicine, there are twenty-five separate sets of paging.

In quite a number of journals, especially among the foreign publications, we find this unfortunate method of having several sets of paging in the same volume. In the *British Medical Journal*, three separate sets of paging are issued: the regular journal matter, "supplement" devoted to association and society items, and "Epitome to Current Medical Literature." The text matter of the *Presse médicale* is divided into three separate divisions of page numbering: original articles, etc., "supplement" (containing miscellaneous items), "revue des journaux." The *Paris médical* forms four volumes annually. Each half year is divided into two volumes, one entitled "partie médicale," which is paged in Arabic numerals in the center of the top of each page, and the other volume, entitled "partie paramédicale," paged in Roman numerals in the center of the top and in Arabic figures in bold face type in the center of the bottom of each page.

The *Medicina Ibera*, published as one volume annually, is divided into two parts, each having two separate sets of paging, one in Arabic and the other in Roman numerals. Then there is the *Norsk Magazin for Lægevidenskaben*, with its various subdivisions with separate paging, and many others that might be mentioned. In a number of French periodicals it is the custom to issue, with separate paging, "fiches bibliographiques" and "bulletin bibliographique," containing bibliographic references to medical literature, which should be bound in with the other part of the journal.

A very bad form is that followed in the *Wiener klinische Wochenschrift*, a folio size periodical, which publishes in each issue a supplement (Sonderbeilage) in octavo size, which should be incorporated in the bound volume as it is listed in the yearly index.

Supplements.—In addition to the types of separate paging just mentioned, there are those journals which issue as supplements, paged separately, special monographs comprising some exhaustive study, such as those published in connection with the various Scandinavian "Acta" periodicals.

Text Matter Among Advertising Pages.—A considerable number of journals continue their reading matter over into the advertising pages in the back. While this may be good form from a commercial standpoint, it is not approved from a book-making standpoint. For instance, in the *Medical Times* (New York) the text matter is continued from the Arabic page numbering on to the back of the advertising pages, which follow the regular reading matter. The *Modern Hospital* is another example of the same condition. To cite a concrete illustration from this journal, the regular paging of the January, 1926, issue ends with page 102, but the reading matter continues on advertising pages 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98 and 100. The text matter of the February issue begins with page 103. Practically all bookbinders in binding the volume would assemble the pages so that page 103 would immediately follow page 102, and unless instructed to bind in either all advertising pages or at least those containing reading matter, would discard the fifteen advertising pages of the January issue, containing reading matter that is a continuation of the text proper.

Thus, the concluding portion of the article continued from page 102 to the advertising page, as well as all the reading matter on the other fourteen advertising pages, would be excluded and the volume stand on the shelves incomplete. This has no doubt been the case in many libraries in which the advertising pages have not been bound in the volume. In binding, in order that the reading matter may continue consecutively, it is necessary to bind in between pages 102 and 103 the intervening fifteen advertising pages containing the reading matter carried over from the regular text matter.

The method followed in the *Nation's Health* is recommended for adoption on the part of all periodicals that carry text matter over into their advertising pages. In this publication the reading matter carried into the advertising section continues at the top of the advertising pages on which the reading matter appears the regular page numbering of the text portion proper, and at the bottom of the same page the consecutive page numbering of the advertising section. On the opposite side of the advertising page containing this reading matter, which is entirely advertising matter, only the running page numbering of the advertising section is printed, so that in the binding of a volume so page numbered, no reading matter will be eliminated by the bookbinder.

Then, again, there is a group of periodicals in which the text and advertising pages are paged consecutively, as in *California and Western Medicine*. While this makes a bulky volume, it does insure completeness on binding. In some periodicals, as the *Monthly Labor Review*, each issue is paged separately. This is not very convenient for indexing by the volume or for quoting in bibliographic references.

The ideal from a bookmaking as well as from a library standpoint is one set of page numbering of all text matter comprising a volume.

From the standpoint of the reader who wishes to refer to the bound or completed volumes, there is much confusion resulting from the numerous separate sets of paging and indexes that go to form one volume of the classes of publications that have just been referred to. The two groups, those with several sets of paging and supplements, and those whose advertising pages contain reading matter, also enter into the economic side of library administration—the care and time required by the library staff in collating these publications for binding, and the added cost of binding for the time and care consumed in assembling these separate sets of paging at the bindery. Some bookbinders do not care to do work of this responsible type and insist on the library taking these publications apart and arranging the volume as it wishes it bound. Careless and indifferent binders would simply bind the issues as sent to them.

RUNNING TITLES AT TOPS OF PAGES

Various forms are now in use in printing the running heads of either articles or titles of periodicals or both at the tops of the pages. This particular procedure in the printed make-up of periodicals is desirable, as it facilitates the finding of articles when the numbers or volumes are consulted. Uniformity in the arrangement of running titles would be of further assistance. An excellent form is that of the monthly publications of the American Medical Association. The running title of the periodical is printed at the top of the left hand page, and the running head of the articles, with the last name of the author, at the top of the right hand page on the same line with the page number; for example:

Left hand running title:

228 *ARCHIVES OF INTERNAL MEDICINE*

Right hand running title:

KOHN—MERCURIC CHLORIDE POISONING 229

TITLE PAGE AND INDEX

No volume published in numbers or parts forms a complete book, from the book-making standpoint, without a title page and index. The dignity, appearance and future serviceableness of many periodicals are greatly depreciated because they fail to provide a proper title page and index to give completeness to their publications. The title page, in addition to the title and other matter, should indicate the volume number and the year or years that it covers. If only a "contents" for the volume is published, it should be numbered in Roman paging and bound in the front of the volume following the title page. When both a "contents" and index are published, the contents should be paged and bound as already stated, and the index, which should preferably be arranged in one alphabetical list of both authors and subjects, should continue the Arabic page numbering immediately following the text matter.

Some journals make the mistake, when printing their title page, of numbering it in with the running page numbering in the issue in which it appears. When it is removed by the binder to be placed in its proper place in the front of the volume it makes a break in the page numbering, giving the impression that something is missing and the book imperfect.

In other instances, the title page and index have been published in a number of the succeeding volume and included in the page numbering of the later volume. On removal for binding in the volume in which it belongs, it makes a break in the paging, which again gives the impression of incompleteness. For example, in the *Journal of the National Medical Association,* pages 61-62 of number 1 of volume 18, 1926, form the index of volume 17, 1925.

In still other cases the error is made of printing a title page on the back of a page of text matter, which makes the title page practically useless, as it is preferable for it to remain with the text matter in its place according to the page numbering it bears. An illustration of this is page 668 of the December, 1925, issue of the *Medical Review of Reviews.*

CHANGE IN MANNER OF PUBLICATION

Suspension and Discontinuance of Publication.—Journals have ceased publication without publishing an announcement in their columns or giving other notice of the fact. When such information is not published, those who preserve and bind their copies, especially libraries, are in doubt as to whether they have the last number issued and whether their sets are complete. Often, because of uncertainty and lack of this knowledge, volumes are retained unbound on the shelves. Our last issue of the *Gulf States Journal of Medicine and Surgery* is number 5 of volume 17, November, 1910. We know that this journal was incorporated with the *Southern Medical Journal,* which began with volume 1, number 1, January, 1911, but we do not know whether a number 6 for December, 1910, was issued of volume 17, and we have not been able to obtain this definite information by mail.

Merging and Consolidating with Other Journals.—The same condition occurs in connection with journals that combine with other publications. They fail to state definitely the last number issued of the publication that is merging into another, and the periodical with which it consolidates likewise neglects to mention this fact. For example, the latest issue of the *Nashville Journal of Medicine and Surgery* that we have, and we believe it to be the last published, is number 3 of volume 114, March, 1920. There is no notice in this number indicating that it intended suspension or consolidation. *Medical Life* on the cover of its November, 1920, issue announced that it had acquired the *Nashville Journal of Medicine and Surgery.* This gap between March and November, 1920, presents the problem as to whether or not our set is complete as it is, or whether other numbers were published subsequently to March, 1920.

Journals ceasing publication or merging into other periodicals should give definite notice indicating the issue with which the cessation or consolidation becomes effective.

JOURNALS WITH VARIOUS SUBDIVISIONS

Especially with the German publications does the bad practice prevail of changing the title of an individual journal and subdividing it into parts under other titles. For instance, the *Zeitschrift für die gesamte Anatomie* is divided into three parts: Abteilung I under the title *Zeitschrift für Anatomie und Entwicklungsgeschichte;* Abteilung II, entitled *Zeitschrift für Konstitutionslehre,* and Abteilung III, *Ergebnisse der Anatomie und Entwicklungsgeschichte.* Another illustration is that of the *Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten.* This is published in two parts: Abteilung I, which covers *Medizinische-hygienische Bakteriologie und tierische Parasitenkunde,* subdivided into two parts, "Originale" and "Referate," and Abteilung II, which covers *Allgemeine landwirthschaftlich-technologische Bakteriologie, Gärungsphysiologie, Pflanzenpathologie und Pflanzenschultz.*

This method of expanding a single periodical into several subdivisions is very confusing from a bibliographic standpoint, and is strongly disapproved by library administrators.

For practicability, convenience of arrangement, quotation, listing and binding, each periodical publication should be a unit in itself, under its own title, with its individual volume and issue numbering.

STANDARDIZATION IN SIZE

The ideal size would be one that would permit journals, when bound, to be accommodated on octavo size shelves. With the *Denver Medical Bulletin,* issued a trifle larger than a postal card, the size of medical periodicals varies to that of *La Voz Medica* of Madrid, which appears in newspaper form (18 by 24 inches). This variation in size makes it impossible for libraries to file the current issues and to arrange the bound volumes on the shelves in one alphabetical arrangement.

CONCLUSION

This presentation will not have been in vain if, through its publicity, it comes to the notice of those who can overcome the variations mentioned and bring about greater uniformity and standardization in medical periodical publications.

1313 Bedford Avenue.

Medicolegal

Action for Illness from Seeing Cockroaches in Pie

(Carroll v. New York Pie Baking Co. (N. Y.), 213 N. Y. Supp. 553)

The Supreme Court of New York, appellate division, second department, in affirming an order and determination of the appellate term affirming a judgment for the plaintiff, does not state the amount of the judgment, but says that the facts, briefly stated, were that, while the plaintiff was eating a piece of pie cut from a pie made by the defendant, she discovered that several cockroaches were embedded in the bottom crust of the pie. They were crushed to such an extent that they were said to have resembled butterflies. The cockroaches were large. Two were about an inch in length, and one was about half an inch long. The plaintiff became ill, and this action was brought to recover the damages occasioned by that illness. The case was properly submitted to the jury. The plaintiff claimed a physical injury. Her claim was that the defendant negligently furnished her an article of food in such a repulsive condition that it nauseated her and made her ill. If she had eaten the foreign substance contained in the pie, and had then become ill, there could be no question but that she would have been entitled to recover damages. The court may, it thinks, with equal certainty go a step further. If the article of food, when cut, had emitted an offensive odor, which nauseated the plaintiff, her right to recover in this action would have been clear. Could her cause of action be any less clear because the repulsive character of the food was comprehended by sight, rather than by taste or smell? In that connection the court may also consider that the dissemination of disagreeable odors has, in numerous instances, been held to constitute a nuisance. That nuisances arising from disagreeable sights are not equally common is, the court thinks, because disagreeable sights can be readily screened from view, but disagreeable odors cannot be easily controlled. The plaintiff made no claim that she was frightened. There is nothing about a cockroach, or several cockroaches, that would cause fright, especially when dead and crushed to such an extent that they resemble butterflies. The plaintiff's illness was not caused by fright, but resulted from the repulsive and nauseating character of the food sold by the defendant. Under these circumstances the jury was required to determine whether the illness of the plaintiff was the natural and proximate result of the defendant's negligence. In this connection this court adopts, as stating the proper rule, that

> The general rule in torts applied to such actions as those of negligence is that the wrongdoer is responsible for the natural and proximate consequences of his conduct, and what are such consequences must be generally left for the determination of the jury. The essential requirements in such cases are that the damages shall be directly traceable to the wrongful act, and not the consequence of some intervening outside cause, and that they shall be the natural result thereof.

Within this rule, the verdict in this case seems to be well sustained by the facts.

Buying False Certificates of Preliminary Education

(State v. Adcox (Mo.), 278 S. W. R. 990)

The Supreme Court of Missouri, division 2, in reversing a judgment of conviction of the defendant of bribing a public official, says that the defendant, who was interested in procuring licenses from the state board of health for persons desiring to practice medicine and surgery, had an arrangement with a county superintendent of schools whereby the latter was to sign and swear to certificates showing the extent of preliminary education acquired by persons to be named by the defendant. The defendant made out the certificates and sent them to the superintendent, who swore to them and returned them to the defendant, the defendant paying him $5 each for them. The state's case was made out entirely on the evidence of the superintendent, who testified that his certificate which was the subject of the bribery charged against the defendant was false in every respect. But it was not within the official duty of the superintendent to issue a certificate, such as the one involved in this case, or any other of like character.

Under section 7332 of the revised statutes of Missouri of 1919, in the chapter relating to medicine, surgery, etc., a person desiring to practice medicine, in presenting his application to the board of health, was required to furnish a "certificate from the county school commissioner certifying that he has satisfactorily passed an examination equivalent to a grade from an accredited high school." When that law was in force, it may be said, it was sufficient to impose on the county superintendent of schools the duty of issuing certificates, such as the one under consideration here. That statute, however, was repealed and reenacted in 1921, and again in 1923, leaving out any language which could be applied to a county superintendent of schools. The act of 1923 was not in force when the alleged offense was committed, and the act of 1921 applied. As the section reads, an applicant for license to practice medicine is required to furnish satisfactory evidence of his preliminary qualifications, to wit, "a certificate of graduation from an accredited high school," etc. The certificate in this case was not a certificate of graduation. The act which the superintendent purported to perform was not within the compass of any official duty of any officer. The defendant paid for a scrap of paper which, if it had told the truth, was worthless for any purpose.

The board of health, under section 7332, acts of 1921, p. 472, had no authority to accept the certificate made by the superintendent. Only a "certificate of graduate from an accredited high school or its equivalent (the equivalent of the school), or state normal school, college, university or academy," would meet the requirements of the law. Such proof of graduation would naturally have to be certified by the person or persons authorized to do it; that necessarily would be teachers who furnished the instruction, or those in charge of the records of grades in such schools. Doubtless the board of health takes advice in such matters, and there was no evidence that the person named in the certificate in question ever presented his certificate to the board.

Doubtless the superintendent was guilty of making a false affidavit under section 3130 of the revised statutes of 1919. In that case his act was unofficial, a misdemeanor, and not the subject of bribery under any statute. If the defendant used the paper which he paid the superintendent to swear to, in order to perpetrate a fraud on the state board of health, that was another and different offense, which did not appear in the record here.

Sufficient Evidence that Injury Caused Death

(Smith v. Primrose Tapestry Co. (Pa.), 131 Atl. R. 703)

The Supreme Court of Pennsylvania, in affirming a judgment sustaining an award under the workmen's compensation act in favor of a widow for the death of her husband, says that on Dec. 9, 1921, while the man was engaged in unloading a box from a truck, the box slipped and fell against him. The only external mark produced was a bruise on the side. On the same day he was placed in the care of his family physician. Though previously in good health, he became progressively worse, his death occurring, Oct. 30, 1923. The existence of a sarcoma, at a point below the bruise first noticed, was discovered when a necropsy was had. Compensation is payable where death occurs within 300 weeks of the time of the accident, provided the testimony shows it was caused by the injury, or, by reason thereof, an incipient condition was hastened to development, ending in the loss. More must appear than a mere possibility of some causal connection, and if such facts as lead to this conclusion are not disclosed, an affirmative finding of the referee to this effect cannot be sustained. To meet the burden in the present case it was proved that the man had been in good health prior to the accident, and that injury resulted therefrom, making necessary *immediate* medical attention, which was continued regularly until the time of his death. No other intervening cause for the sudden breakdown appeared—a matter which was to be considered. The physician who was in charge of the patient for the whole time until death, except during August and September, 1923, testified that, from his observation of the case, he believed that the cancer, as a result of which death ensued, arose from the injury. Of all persons, he was best qualified to give a professional opinion. The evidence showed sufficiently his competence to express a judgment, and his reasons for the conclusion asserted were fully explained. His statement showed that the death not only possibly resulted from the injury, but that it was actually caused by it. This was sufficient, and fully justified the finding of the referee in regard thereto, which was that as a fact there was a causal connection between the injury and the death.

Identification of Roentgenograms—Physicians' Bills

(Wicks v. Cuneo Henneberry Co. (Ill.), 150 N. E. R. 276)

The Supreme Court of Illinois, in affirming a judgment in favor of the plaintiff in this action to recover for personal injuries, says that during the examination of a physician the plaintiff offered in evidence two roentgenograms. When the first one was offered there was an objection that it was not properly identified. The physician had testified that he was present when the exposure was made, and that he waited while the plate was taken into the dark room and developed; that he examined the plate and was positive that it was the roentgenogram taken of the hand of the plaintiff. It was sufficiently identified, and the objection was properly overruled. But the objection made when the second roentgenogram was offered in evidence should have been sustained, the objection being that a proper foundation had not been laid for its admission, for the reason that the witness did not develop the plate nor did he see it developed, nor could he testify that it was an accurate portrayal of the condition of the bones of the hand. The error in admitting this roentgenogram, however, was not prejudicial, for the reason that the physician testified that the condition shown by this roentgenogram was the same as that shown by the other. Furthermore, the physician testified fully concerning the condition of the injured hand, and there was no contention on the trial that the condition described by him did not exist nor that the roentgenograms showed a condition different from that described by him.

An instruction given on behalf of the plaintiff regarding the measure of damages included, among the elements, "her reasonable physicians' bills, necessarily incurred, if any." A physician who treated the plaintiff two or three times a week during the first month after the accident, and occasionally thereafter, testified that he made a charge for his services, and that he had been paid; but he did not give the amount of his charge, nor was there any proof that it was a usual and customary charge. Another physician testified that he saw the plaintiff on three occasions; that on the third occasion he made an examination of the hand with and without the use of the roentgen ray; that he was paid $3 for the first visit; and that he had not been paid for the other visits, but expected to be. The defendant asked the court to instruct the jury that no recovery be allowed for medical and surgical treatment for the reason that there was no evidence of a specific amount which the plaintiff had paid or had become liable to pay, and because there was no evidence that the amounts paid or charged were the usual and reasonable charges for services of that nature. This instruction was refused, and the court does not agree with the contention that there was error. The law is settled in Ilinois that, in order to recover for medical and surgical services, it is necessary that two things be proved: first, that the claimant has paid or become liable to pay a specific amount; and, second, that the charges made were reasonable charges for services of that nature. Here the plaintiff showed that one of the physicians had charged and was paid by the plaintiff $3 for his services. The payment of the bill of a physician is prima facie evidence that it is reasonable. The payment of the bill being sufficient to make a prima facie case that the charge of $3 was in fact reasonable, it was proper for the jury to consider this item as an element of damages. The given instruction stated that physicians' bills should be allowed, "if any" were proved, and it must be assumed that the jury did not consider items not proved.

Validity of University's Requirement of Vaccination

(Wallace v. Regents of University of California et al. (Calif.), 242 Pac. R. 892)

The District Court of Appeal of California, first district, division 1, in denying the petitioner a writ of mandate to compel the regents of the university and the university to enter him as a student in the university, says that his application to be entered as such student had been denied because he refused to submit to vaccination against smallpox, or offer proof of previous vaccination. The respondents admitted that every person in attendance as a student at the university was, by a rule or regulation adopted by the regents, required to furnish satisfactory evidence that he had been successfully vaccinated against smallpox within seven years prior to his application for admission. The sole question thus presented was whether or not the regulation of the university was one which it had power to enact.

In 1921 the state legislature repealed the only act then in effect dealing with the subject of vacination, and enacted a law providing that "the control of smallpox shall be under the direction of the state board of health, and no rule or regulation on the subject of vaccination shall be adopted by school or local health authorities." The respondents contended that the word "school," as employed in the statute, was not used in its generic sense, but, rather, was limited to institutions of lesser academic requirements than colleges or universities. They contended, too, that the phrase "local health authorities" had also a limited meaning, and referred to subordinate health boards and health districts of the state. A further contention was that, even assuming that the regents of the university might be said to come within the prohibition of the statute, the statute, so far as the respondents were concerned, was unconstitutional and void. The court is of the opinion that they were correct in this last contention, and it need not decide on the construction of the terms mentioned.

The board of regents of the university had, at the time the rule in question was promulgated, power to adopt and enforce regulations concerning health measures and to require vaccination as a prerequisite to the admission of a student to the university, as at that time there was an absence of legislation lawfully limiting the exercise of that power. But there was no question but that the legislature might under its police power limit or abrogate that right. In fact, the respondents conceded that the power vested under the state constitution in the regents was not so broad as to destroy or limit the general power of the legislature to enact laws for the general welfare of the public, including laws regulating the subject of vaccination, even though it might incidentally affect the University of California, as such a law would be paramount as against a rule of the regents in conflict therewith. However, the legislative declaration that no rule or regulation should be adopted by school or local health authorities was not a regulation, nor, in fact, was it a health law.

So far as the act might be considered as a prohibition or limitation on the constitutional power of the university to pass health laws, it was clearly void. The legislature could not, by this character of a general law, take away or impair the power so granted. In order to accomplish this result it must itself regulate the subject by appropriate legislation. A general law which does not itself regulate, but which merely provides, as here, that there shall be no local regulation, can have no proper application to local bodies deriving their powers under a constitutional grant.

Hearing denied by the Supreme Court of California.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Colorado Springs, Sept. 13-18. Dr. Luther C. Peter, N. E. Cor. Chestnut and 20th Streets, Philadelphia, Secretary.

American Association for Thoracic Surgery, Montreal, Canada, Sept. 30. Dr. Ethan Flagg Butler, Robert Packer Hospital, Sayre, Pa., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Chicago, Sept. 20-22. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.

American Climatological and Clinical Association, Philadelphia, Sept. 27-28. Dr. A. K. Stone, Auburn Street, Framingham Center, Massachusetts, Secretary.

American Electrotherapeutic Association, Atlantic City, Sept. 8-11. Dr. Richard Kovacs, 223 E. 68th Street, New York City, Secretary.

American Public Health Association, Buffalo, Oct. 11-14. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

Association of Military Surgeons of the United States, Philadelphia, Oct. 14-16. Col. J. R. Kean, U. S. A., Ret., Army Medical Museum, Washington, D. C., Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 21-23. Dr. F. B. Stephenson, 460 Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Dover, Oct. 12-13. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Idaho State Medical Association, Sandpoint, Sept. 2-5. Dr. J. N. Davis, Kimberly, Secretary.

Indiana State Medical Association, West Baden, Sept. 22-24. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Kentucky State Medical Association, Frankfort, Sept. 20-23. Dr. A. T McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Lansing, Sept. 14-17. Dr. F. C. Warnshuis, Powers Theatre Building, Grand Rapids, Secretary.

Missouri Valley, Medical Society of the, Council Bluffs-Omaha, Sept. 15-17. Dr. Charles Wood Fassett, 115 East 31st St., Kansas City, Mo., Sec'y.

National Tuberculosis Association, Washington, D. C., Oct. 4-7. Dr. George M. Kober, 1819 Eye Street, N. W., Washington, D. C., Sec'y.

Nevada State Medical Association, Reno, Sept. 24-25. Dr. H. J. Brown, Gray-Reid Building, Reno, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 11-14. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southwest, Medical Association of the, Kansas City, Mo., Oct. 5-9. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Vermont State Medical Society, Burlington, Oct. 14-15. Dr. W. G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 12-15. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Western Surgical Association, Duluth, Minn., Oct. 14-16. Dr. H. P. Ritchie, Lowry Building, St. Paul, Secretary.

Wisconsin, State Medical Society of, Madison, Sept. 15-17. Mr. J. G. Crownhart, 153 Oneida Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in North America for a period of three days. Foreign journals prior to 1921 and domestic journals prior to 1923 are not available. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Albany, N. Y.

16: 557-668 (June) 1926

*Insecurity of Tenure Obstacle to Public Health Administration. S. J. Crumbine, New York.—p. 557.
Record Forms in Syracuse Health Demonstration. G. C. Ruhland and I. F. Thompson, Syracuse, N. Y.—p. 567.
*Administrative Control of Measles. E. S. Godfrey, Jr., Albany, N. Y. —p. 571.
Anaerobes in Sewage. F. E. Greer, Chicago.—p. 577.
Immediate Opportunities in Child Health Conservation. D. B. Armstrong, New York.—p. 579.
Examination of Child Before Entering School. E. S. Stadtmuller, San Francisco.—p. 586.
Studies on Lactose Fermenting Bacteria. F. Berry, Columbus, Ohio. —p. 590.
*B. Coli in Market Oysters. F. O. Tonney and J. L. White, Chicago. —p. 597.
Preparation of Health Department Bulletins. I. V. Hiscock, New Haven, Conn.—p. 602.
Cancer Mortality. H. W. Green, Cleveland.—p. 605.
Rudyard Kipling on Public Health. L. J. Bragman, Syracuse, N. Y. —p. 609.
Selling Public Health. R. G. Beachley, Spartanburg, S. C.—p. 616.

Obstacles to Public Health Administration.—Two major handicaps, in Crumbine's opinion, are operating against a successful career in public health: (*a*) lack of a technical training in public health administration, and (*b*) insecurity of tenure of office. It is believed that insecurity of tenure and a low general average of salaries paid health officers are the chief reasons why so few capable young men are interested in a public health career. Two suggestions are offered as remedies for insecurity of tenure: (*a*) that health officers make conscientious and courageous use of the appraisal form to list their cities' health assets and liabilities; and, (*b*) that industrial and life insurance companies consider the fire insurance plan of city and personal credits and classification for adoption in industrial and life insurance. Security of tenure and freedom from unjust political interference, as assured to chiefs of fire departments under the fire insurance rating plan, should, under the industrial and life insurance plan, provide for similar guarantees for the health officer.

Administrative Control of Measles.—The plan proposed by Godfrey contemplates preparedness in advance of the outbreak so that, while things are done expeditiously, they are done in an orderly fashion. The one essential is never to forget, or allow the parents of young children in particular to forget, that measles under 3 is a dangerous disease. A second essential is to make them understand that measles is dangerous to sickly and delicate children; that under 3 is the danger period and the further under that age, the greater the danger, and that any person, especially an adult who contracts measles, should go to bed and receive good medical and nursing care and have a reasonable period for convalescence.

Colon Bacillus in Oysters.—Tonney and White recommend, as a tentative standard, a *B. coli* score, not to exceed 140, for shucked oysters and a standard, not to exceed 50, for shell oysters and hard shell clams. A study of 856 routine samples of shucked oysters received in the Chicago market during the season 1924-1925 shows that 71 per cent would have passed a *B. coli* score of 140. A study of 205 routine samples of shell oysters, collected in the Chicago market during the season of 1924-1925, shows that 97 per cent would have passed a *B. coli* score of 50, and 100 per cent of 164 samples of shell clams would have passed the same score. A study of 802 routine samples of shucked oysters collected in the Chicago market during the first part of the season of 1925-1926 shows a decided improvement in the sanitary quality of this product over that of the corresponding period of the previous season.

California and Western Medicine, San Francisco

24: 721-864 (June) 1926

Some Methodless Musing from Rome. L. Porter, San Francisco.—p. 753.
Sulpharsphenamine for Intramuscular Injection. I. C. Sutton, Hollywood.—p. 757.
Dermatology as Medical Science, Healing Art and Practice of Medicine. M. Scholtz, Los Angeles.—p. 759.
Physiology and Minor Pathology of Functioning Breast. J. W. Sherrick, Oakland.—p. 764.
Diagnosis of Chronic Amebiasis. W. T. Davidson, San Francisco.—p. 768.
Evolution of Surgeon from General Practitioner. A. S. Musante, San Francisco.—p. 770.
Conservative Treatment of Eclampsia. M. Schulze, San Francisco.—p. 771.
Chronic Polyarthritis. R. Smith, Los Angeles.—p. 775.
Skin Diseases in Twins. T. J. Clark and F. H. Stibbens, Oakland. —p. 777.

Journal of Biological Chemistry, Baltimore

68: 499-883 (June) 1926

Solubility of Vitamin B in Benzene. R. R. Williams and R. E. Waterman, New York.—p. 499.
Comparative Metabolism of Certain Aromatic Acids. X. J. B. Muenzen, L. R. Cerecedo and C. P. Sherwin, New York.—p. 503.
*Relation of Solubility to Absorption of Calcium Salts from Intestine. L. Irving, San Francisco.—p. 513.
Effect of Temperature on Catalase Reaction. I. Effect of Different Hydrogen Peroxide Concentrations. S. Morgulis, M. Beber and I. Rabkin, Omaha.—p. 521.
Id. II. Loss of Catalase Activity. S. Morgulis, M. Beber and I. Rabkin, Omaha.—p. 535.
Id. III. Temperature Effect at Different Hydrogen-Ion Concentrations. IV. Theory of Catalase Reaction. S. Morgulis, M. Beber and I. Rabkin, Omaha.—p. 547.
Surface Tension as Factor in Detoxication. A. R. Rose and C. P. Sherwin, New York.—p. 565.
Effect of Dihydroxyacetone on Insulin Hypoglycemia. W. R. Campbell and J. Hepburn, Toronto.—p. 575.
Simpler Nitrogenous Constituents of Yeast. I. Choline and Nicotinic Acid. H. B. Vickery, New Haven, Conn.—p. 585.
*Preparation of Adenine Nucleotide from Tea Leaves. H. O. Calvery, Baltimore.—p. 593.
Study by Means of Ultrafiltration of Condition of Several Inorganic Constituents of Blood Serum in Disease. J. B. Pincus, H. A. Peterson and B. Kramer, Baltimore.—p. 601.
Oxidation-Reduction Potentials of 2-Oxydihydroindole-3-Proprionic Acid and Some of Its Halogen Derivatives. E. C. Kendall and J. M. Ort, Rochester, Minn.—p. 611.
Intermediary Carbohydrate Metabolism. I. Influence of Insulin on Levulose and Glucose Intravenously Administered. M. Wierzuchowski, Chicago.—p. 631.
Colloidal Properties of Surface of Living Cell. I. Conductivity of Blood to Direct Electric Currents. J. F. McClendon, Minneapolis.—p. 653.
*Vitamin E and Reproduction on Synthetic and Milk Diets. H. A. Mattill and M. M. Clayton, Rochester, N. Y.—p. 665.
Studies of Metabolism of Women. II. Cyclic Variations in Uric Acid and Total Nonprotein Nitrogen Content of Blood. R. Okey and S. E. Erikson, Berkeley, Calif.—p. 687.
Quantitative Estimation of Calcium, Magnesium, Phosphate and Carbonate in Bone. B. Kramer and J. Howland, Baltimore.—p. 711.
Inorganic Composition of Bones. J. Howland, W. M. Marriott and B. Kramer, Baltimore.—p. 721.
*Mineral Content of Human, Dog and Rabbit Skin. H. Brown, Philadelphia.—p. 729.
Lactone Formation from Gluconic Acids and Structure of Glucose. P. A. Levene and H. S. Simms, New York.—p. 737.
Comparison of Folin-Wu and New Benedict Method for Sugar in Blood and Cerebrospinal Fluid. J. D. Lyttle and J. E. Hearn, New York. —p. 751.
Estimation of Blood and Urine Sugar. S. R. Benedict, New York.—p. 759.
*Can Purines, Creatinine or Creatine Replace Histidine in Diet for Purposes of Growth? G. J. Cox and W. C. Rose, Urbana, Ill.—p. 769.
Availability of Synthetic Imidazoles in Supplementing Diets Deficient in Histidine. G. J. Cox and W. C. Rose, Urbana, Ill.—p. 781.
Animal Calorimetry. XXXII. Physiologic Behavior of Glucosane. H. J. Deuel, Jr., S. S. Waddell and J. A. Mandel, New York.—p. 801.
Antiricketic Substances. IV. Polymerization of Cholesterol. C. E. Bills and F. G. McDonald, Evansville, Ind.—p. 821.
Effect of Histamine on Acid-Base Balance. A. Hiller, New York.—p. 833.
Effect of Histamine on Protein Catabolism. A. Hiller, New York.—p. 847.

Absorption of Calcium from Intestine.—The results of Irving's experiments are in accord with the idea that calcium absorption is greatly affected by solubility conditions in the intestine. Under comparable conditions absorption of calcium salts proceeds in this order: acid acetate > neutral chloride > acid citrate > acid lactate.

Adenine Nucleotide in Tea Leaves.—A crystalline substance has been obtained by Calvery from tea leaves, which is identical with the adenine nucleotide obtainable from yeast nucleic acid.

Vitamin E and Reproduction.—Observations made by Mattill and Clayton on 150 animals on various synthetic rations indicate that vitamin E is a necessary dietary constituent for the establishment of fertility in male rats. Animals reared on synthetic rations devoid of vitamin E show the same critical period, from 90 to 150 days of age, beyond which the administration of vitamin E seldom restores the degenerated testes to normal function.

Mineral Content of Skin.—Data are presented by Brown giving the results of determination of calcium, magnesium, sodium and potassium in the skin of man, the dog and the rabbit. Individual variability in mineral content in the same species as well as distinct differences among different species are pointed out.

Journal of Urology, Baltimore

15: 505-626 (June) 1926

*Experimental Nephrotomies. III. Without Sutures, in Dogs with Single Kidneys. W. J. Carson and A. E. Goldstein, Baltimore.—p. 505.
*Spontaneous Rupture of Hydronephrosis: Case. R. M. LeComte, Washington, D. C.—p. 517.
*Rare Anomaly of Left Ureter. H. T. Low and J. C. Epler, Pueblo, Colo.—p. 523.
Cystoscopic Removal of Ureteral Calculi: New Instrument. H. L. Cecil, Dallas, Texas.—p. 529.
Composite Direct and Indirect Vision Cystoscope. G. Greenberg, New York.—p. 553.
Injuries of Urethra and Bladder: Thirty Cases. A. H. Peacock and R. F. Hain, Seattle, Wash.—p. 563.
*Herpes Zoster of Bladder. F. E. Dubois, New York.—p. 583.
Foreign Body in Bladder Complicating Postoperative Convalescence. V. C. Pedersen, New York.—p. 587.
Chemical Reaction of Prostatic Secretion and Semen Hydrogen-Ion Study. M. Muschat, Philadelphia.—p. 593.
Torsion of Testis. M. Meltzer, New York.—p. 601.
Sarcoma of Penis. E. G. Mark, Kansas City, Mo.—p. 611.

Experimental Nephrotomy.—The radical method of incision without capsule suture on single and pathologic kidneys was tried by Carson and Goldstein on dogs and found to be a safe procedure. Nephrolithotomy without suture was successful. Histologic studies on such kidneys demonstrated a minimum destruction of kidney tissue.

Spontaneous Rupture of Hydronephrosis.—In the case cited by LeComte, an infection of the kidney had occurred during childhood; the infection probably ceased at about the age of 10 years but left weakened kidney substance which permitted a hydronephrosis to develop. Since drainage through the ureter was not impaired, there was no pain to draw attention to the condition, although the degeneration progressed until a vessel ruptured and bled into the pelvis. Later a brisk hemorrhage occurred with the formation of clots too large to engage readily in the ureter so that the intrapelvic pressure was increased and the kidney ruptured. With relief of the intrapelvic pressure, the bleeding was checked somewhat, only to be renewed later, this time with the development of colic and a perirenal hematoma. The kidney was removed.

Duplication of Ureter.—Low and Epler report a case of duplication of the left ureter with ectopic opening in the urethra. The supernumerary ureter was completely occluded at the level of the sacral canal, the lower end of which became infected, dilated and acted as an elongated urethral diverticulum, which periodically would discharge its purulent contents into the urethra. As it was impossible to separate these two ureters, a complete ureterectomy and nephrectomy were done.

Herpes Zoster of Bladder.—The diagnosis in Dubois' case was based on the fact that cystoscopy showed typical herpetic vesicles coincident with a typical herpes zoster of the buttock of the same side. It is of note that the nerve supply of the buttock and of the base of the bladder is the same; i. e., from the sacral plexus. The diagnosis was further confirmed by the more or less rapid disappearance of both the cutaneous and mucosal lesions at the same time, without any particular treatment, other than mild urinary antiseptics and a local application of methylene blue to the external lesions.

Laryngoscope, St. Louis

36: 391-468 (June) 1926

Studying Action of Vocal Muscles During Phonation. L. E. Dodd, Los Angeles.—p. 391.
Glossopharyngeal Neuralgia. G. C. Albright, Iowa City.—p. 407.
Significance of Papilledema in Neurosurgery. W. Sharpe, New York.—p. 411.
Atypical Mastoiditis. J. J. McLoone, Phoenix, Ariz.—p. 418.
Middle Ear Abscess. M. M. Cullom, Nashville, Tenn.—p. 426.
Needlessness of Myringotomy in Acute Middle Ear Inflammations. C. Gluck, New York.—p. 427.
Zinc Ionization Treatment of Chronic Discharging Ears and Allied Conditions. J. McCoy, New York.—p. 434.
Radium in Diseases of Eye, Ear, Nose and Throat. L. A. Pomeroy and A. Strauss, Cleveland.—p. 437.
Use of Acriviolet in Diseases of Upper Respiratory Tract and Ear. A. J. Herzig, New York.—p. 445.

Michigan State Medical Society Journal, Grand Rapids

25: 259-326 (June) 1926

*Intestinal Infections and Food Disturbances of Infancy. I. A. Abt, Chicago.—p. 259.
Use and Abuse of Wassermann Reaction. L. W. Shaffer, Detroit.—p. 262.
Labor Following Hysterotomy. H. J. Prall, Eaton Rapids.—p. 268.
*Lipiodol in Otolaryngologic Diagnosis. R. H. Fraser, Battle Creek.—p. 270.
Intractable Bladder Disturbance in Women. W. R. Chynoweth, Battle Creek.—p. 274.

Treatment of Diarrheas of Infants.—Concerning active treatment, given a baby with a diarrhea, progressive emaciation, loss of appetite and vomiting, Abt warns against the use of laxatives. Cathartics increase peristalsis, the number of stools and the water loss from the body, and thus aid in the production of dehydration. They also irritate the intestinal mucosa, and they do no possible good. The treatment is mainly one of diet and hydrotherapy. Antiseptic drugs are no longer employed, and their use is obsolete. In extreme restlessness or severe diarrhea, small quantities of an opiate may be required. Further than this, there is no indication for the use of drugs in the food disturbances of infancy.

Lipiodol Injection in Otolaryngologic Diagnosis.—Injection of the upper respiratory spaces with roentgenographically opaque liquid, for which the term "opaque injection" is suggested by Fraser, is said to have such merits that it deserves development for frequent use in office practice. It is a safe procedure, as applied to the maxillary sinus, is always of interest in cases for which it is suitable, and is often of the highest value.

Radiology, St. Paul

6: 457-548 (June) 1926

Value of Concentrated Arc Light Treatment in Cases of Roentgen-Ray and Radium Lesions of Skin. A. Reyn, Copenhagen.—p. 457.
Interpretation of Pyelographic Shadow. B. H. Nichols, Cleveland.—p. 469.
Variations in Normal Pyelograms. D. N. Eisendrath and R. A. Arens, Chicago.—p. 474.
Shadows in Urinary Tract. O. Grant, Louisville, Ky.—p. 481.
Carcinoma of Cervix and Fundus Uteri Treated by Combinations of Surgery, Radium and Roentgen Ray. H. H. Bowing, Rochester, Minn.—p. 487.
Relative Value of Various Technics in Radiation Treatment of Carcinoma of Breast. G. E. Pfahler and B. P. Widmann, Philadelphia.—p. 493.
First Infection in Pulmonary Tuberculosis: Pleural Dissemination. L. R. Sante, St. Louis.—p. 504.
Radioactive Substances: Therapeutic Uses; Radium Treatment of Rectal Carcinoma. J. Muir, New York.—p. 509.
One Hundred Milliampere, One-Tenth of Second Technic. E. C. Jerman, Chicago.—p. 513.
Roentgen-Ray Treatment of Pulmonary Infiltration Induced by Massive Radiation of Chest. J. Roemer, Paterson, N. J.—p. 516.
Case of Gastric Diverticulum. J. D. Lawson, Woodland, Calif.—p. 518.
Polypoid Tumors in Pyloric End of Stomach: Three Cases. C. G. Sutherland, Rochester, Minn.—p. 520.
Periosteal Changes in Lymphatic Leukemia. H. K. Taylor, New York.—p. 523.
Subpleural Fibrolipoma: Case. G. H. Hess, Uniontown, Pa.—p. 525.

Southwestern Medicine, Phoenix, Ariz.

10: 247-288 (June) 1926

Public and Physician. G. A. Bridge, Bisbee.—p. 247.
Tularemia. A. Martin, Phoenix.—p. 249.
Newer Methods in Roentgen-Ray Diagnosis of Gallbladder Lesions. W. B. Bowman and L. S. Goin, Los Angeles.—p. 253.
Cesarean Section. E. P. Palmer, Phoenix.—p. 257.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

23: 87-164 (April-June) 1926

Measurements of Fourteen Hundred London Children. B. Myers.—p. 87.
*Varicella Encephalitis and Vaccinia Encephalitis. D. W. Winnicott and N. Gibbs.—p. 107.
*Acrodynia. A. E. Vipond.—p. 127.
*Case of Herpes Recurrens. C. I. Wright.—p. 132.

Varicella and Vaccinia Encephalitis.—A case of varicella encephalitis is reported by Winnicott and Gibbs and twelve other cases which have been described in the last thirty years are quoted or abstracted. A case of vaccinia encephalitis is also described, and forty-four other cases of possible vaccinia encephalitis are quoted. Two cases of measles encephalitis are described, and brief reference is made to the published cases.

Vaccine Therapy of Acrodynia.—In the treatment of acrodynia patients, Vipond claims universal success from the use of a vaccine made from a diplococcus which he recovered from an inguinal node. He gives each patient 1 cc. of the vaccine subcutaneously as a primary dose. In three days the patients show a marked improvement. He then gives from 1.5 to 2 cc. as a dose. After from three to four doses more of 4 or 5 cc. of the vaccine, the patients are practically cured.

Herpes Recurrens.—Wright reports the case of a girl, aged 12, who following a moderate attack of diphtheria, developed an herpetic eruption on both cheeks. Its distribution was asymmetrical, being over the subzygomatic and midmandibular regions on the left, and over the malar eminence on the right. Two days later several rounded, tense unilocular bullae were present on both sides. Culture of the contained fluid was sterile. No source of reflex irritation was apparent other than the recent throat condition. For the last three years the patient has had recurrent attacks of herpes on one or other cheek about three times a year, usually associated with the onset of a cold. In no previous attack had the lesions been bilateral. There was no personal or familial history of urticaria, asthma, migraine, gout, malaria, syphilis, or tuberculosis.

British Journal of Ophthalmology, London

10: 369-416 (July) 1926

Periscopic Lenses. A. S. Percival.—p. 369.
Iris Inclusion Complication. H. Herbert.—p. 380.
*Dislocation of Lens Occurring in Four Successive Generations. E. P. Cameron.—p. 384.
Pedigree of Lamellar Cataract. W. A. Khan.—p. 387.
Atypical Coloboma of Iris. W. A. Khan.—p. 389.
Familial Juvenile Degeneration of Macula. J. S. Steyn.—p. 391.

Hereditary Dislocation of Lens.—In the group studied by Cameron, there have been fourteen persons of the same family affected, of whom only one was a male. Five have had to be trained in institutions for the blind. In every case, both lenses have been dislocated, the vision has been seriously affected and a squint, either convergent or divergent, has been apparent. Among those affected were the great-grandmother (an only child), four of the latter's six children (five girls and one boy); eight of the sixteen children of the four girls affected—but none of the six children of the unaffected girl and boy.

China Medical Journal, Shanghai

40: 517-602 (June) 1926

Early Days of Western Medicine in Peking. J. G. Cormack.—p. 517.
Syringomyelia. A. H. Woods.—p. 534.
Blood-Sucking Arthropods in China. W. S. Patton.—p. 543.
*Typhoid in Korea. W. R. Cate.—p. 554.
Tinea Capitis in Chinese Orphanage. C. N. Frazier.—p. 558.
Advantages of Rectus Incision in Addition to Regular Herniotomy Incision in Certain Complicated Cases. R. V. Taylor.—p. 562.
Chinese Folklore: Conception and Maternity. A. E. Best.—p. 564.

Typhoid in Korea.—For the whole of Korea, Cate says, there were among the Japanese 5,980 cases of typhoid with 1,191 deaths during this four year period. This is 1,495 cases and 297 deaths per year. This is an incidence of 373 per hundred thousand population and a percentage mortality of 19 per cent, or 76 deaths per hundred thousand population. Among the Koreans, there were 8,093 cases and 1,522 deaths, equivalent to 2,023 cases and 380 deaths per year. This is an incidence of 11 per hundred thousand and a percentage mortality of 18 per cent, or 2 deaths per hundred thousand population. The conditions under which the Koreans live, their sources of water supply, washing food in dirty pools and streams, would lead one to expect a higher incidence among them than among the Japanese, but the figures given show a vastly greater frequency among the latter.

Edinburgh Medical Journal

33: 401-464 (July) 1926

Disciples of Boerhaave in Edinburgh. G. Newman.—p. 401.
*Retroperitoneal Cysts. R. L. Stewart.—p. 432.
Intersigmoid Hernia: Case. A. J. C. Hamilton.—p. 448.

Retroperitoneal Cysts.—Two cases are recorded by Stewart. In both, the cyst lay posterolateral to the cecum and ascending colon and, by forward compression of the ureter, caused hydro-ureter and hydronephrosis above. One cyst showed the typical structure of an ovarian cystadenoma in a portion of its wall, while the other revealed no characteristic features and only an atrophic epithelial lining. It appears justifiable to Stewart to infer that both these cysts were probably of urogenital origin.

Indian Medical Gazette, Calcutta

46: 161-192 (June) 1926

Longevity and How to Attain Long Life. J. N. Ganguli.—p. 161.
Antibodies. A. Roy.—p. 163.
Phlebotomus Argentipes. S. N. De.—p. 170.
Quinine Urticaria: Absorption of Quinine in Malaria. S. Chatterjee.—p. 171.
Physostigmine in Glaucoma. B. C. Vachhranjani.—p. 172.
Typhoid Fever. R. B. Ghosh.—p. 172.

Japanese Journal of Medical Sciences, Tokyo

1: 1-81, *1926* (Pathology)

Changes in Bone Marrow in Various Diseases: Pathogenesis of Primary Diseases of Myeloid System. M. Masugi.—p. 1.
Theory of Enteral Function of Lymphocytes. K. Satake.—p. 39.

Medical Journal of South Africa, Johannesburg

21: 265-294 (May) 1926

*Etiology of Gastric Ulcer. S. N. Sennett.—p. 268.
Typhoid Fever. J. D. M. Classens.—p. 271.
Examinations: Their Stress Factor in Mental Disease. M. J. Cohen.—p. 274.
First S. A. Medical Journal: Contribution to Medical History. C. L. Leipoldt.—p. 277.
Bone Grafting for Cranial Defect. J. J. Levin.—p. 283.

Etiology of Gastric Ulcer.—Clinical, pathologic and experimental studies have convinced Sennett of the truth of Virchow's teaching that the circulatory disturbance in the smallest arterioles in the mucosa is the basis of the genesis of gastric ulcer. This can be brought about by toxic infectious causes or by vagotonic and angioneurotic reflex action (constitutional) or by disease of the gastric mucous membrane (gastritis acida) or changes in the vessels (arteriosclerosis, heart failure) or by mechanical factors (stasis, pressure, blow) or by more than one of these factors acting simultaneously, giving rise to local necrosis of the mucosa. Under favorable conditions the necrosis remains localized and superficial (erosion) and shows a tendency to heal, but under unfavorable conditions, such as hyperacidity, deficiency of antipepsin, conditions of stasis, it penetrates into the gastric wall, becomes chronic and is the typical chronic gastric ulcer.

South African Medical Record, Cape Town

24: 241-264 (June 12) *1926*

Exophthalmic Goiter. I. J. Drummond.—p. 242.
Id. II. Pathology. J. G. Johnstone.—p. 242.
Id. III. Electrotherapeutic Aspect. H. E. H. Oakeley.—p. 244.
Id. IV. Medical Aspect. C. Lundie.—p. 246.
Id. V. Surgical Aspect. A. D. Mackenzie.—p. 248.
Relationship Between Government and Medical Profession in South Africa. A. J. T. Roux.—p. 250.
Bacteriologic Research on Plague During 1925. A. Ingram and J. H. H. Pirie.—p. 252.

Annales de Médecine, Paris

19: *329-456 (April) 1926*

The Acid-Base Balance. M. Labbé.—p. 329.
Basal Metabolism. E. J. Bigwood.—p. 345.
Action of Mineral Waters on Nutrition. Mouriquand et al.—p. 370.
The Alkali Reserve in Diabetics. M. Labbé et al.—p. 379.
*Insulin and Experimental Diabetes. H. Penau and H. Simonnet.—p. 401.
*Hypertension of Renal Origin. Weil and Guillaumin.—p. 415.
*Curable Ascites. N. Fiessinger.—p. 428.
Cholecystography. M. Labbé and A. Lomon.—p. 441.

Insulin and Experimental Diabetes.—Penau and Simonnet's experiments were made on three female dogs. After the whole of the pancreas had been removed, the animals were able to survive for over two years if they were given insulin and a certain amount of carbohydrates regularly. An exclusive meat diet seems to contribute indirectly to formation of ketogenic substances. The results were better with fractional doses of the insulin, injected at feeding times, rather than with a single large dose, daily. Two of the dogs gave birth to normal young. The fact that the matinal glycemia remained high in the gravid animals tends to confirm Allen's theory that the products of fetal pancreatic secretion do not pass through the placenta.

Arterial Hypertension from Defective Nutrition.—An increase of purine compounds in the blood cells, associated with that of sugar and cholesterol in the plasma, represents a particular syndrome. It is entailed by disturbed metabolism of nucleoproteins, carbohydrates and fats, due to liver deficiency from faulty nutrition. In Weil and Guillaumin's patient, aged 60, the humoral syndrome coexisted with peripheral arterial hypertension, which may be explained by a secondary insufficiency of the kidneys owing to the passage through them of the defective blood. The hypertension may be merely functional for a long time, before it becomes organic. Under appropriate diet and adequate care of the liver and intestines, this hypertension may improve or even disappear.

Cure of Ascites in Alcoholic Cirrhosis.—Fiessinger considers that ascites is induced by fatty degeneration of the liver cells. Under this degeneration, the size of the cells increases; consequently they compress the blood capillaries, causing intrahepatic hypertension. The ascites may disappear as the functioning of the liver improves. This seems to be demonstrated by a gain in weight, paralleling the decrease of the ascites; while loss of weight accompanies liver insufficiency. The efficacy of mercury and bismuth in certain cases seems to be due to their slightly toxic action, enhancing the activity of the cells. Cell division and hyperplasia create a new parenchyma. A diet containing carbohydrates, fats and proteins in adequate amounts and repose are the chief measures in treatment. They report fourteen personal cases which have been cured, enough of the liver apparently recuperating.

Archives des Maladies de l'Appareil Digestif, Paris

16: *513-632 (May) 1926*

*Cholecystography. C. Bonorino Udaondo and E. Lanari.—p. 513.
Surgery for Gallstones. M. Einhorn.—p. 528.
Nervous Disturbances Associated with Anemia. P. Mathieu.—p. 536.
Clinical and Radiologic Diagnosis of Appendicitis. J. Baumel.—p. 552.

Visualization of the Gallbladder.—Bonorino Udaondo and Lanari used the sodium salt of tetraiodophthalein, by the vein or by the mouth, for visualization of the gallbladder, in about 100 cases. They describe their method and give eleven roentgenograms of the normal gallbladder and of conditions in different pathologic states. In one case the kidney on that side became visualized, as well as the gallbladder.

Lyon Chirurgical

23: *137-272 (April) 1926*

*Surgery for Splenomegaly. A. Troell.—p. 137.
Cysts of the Mesocolon. M. Patel et al.—p. 169.
*Pulmonary Echinococcosis. E. Bressot.—p. 186.
Strangulated Obturator Hernia. P. Bonnet.—p. 199. C'cn.

Surgical Treatment of Splenomegaly.—Troell reports the results of surgical treatment of splenomegaly in eight patients with Banti's disease, in three with hemolytic jaundice, in two with pernicious anemia, in one with essential thrombopenia and in one with a tuberculous spleen. Splenectomy was applied in thirteen, and partial ligation of the spleen vessels, in two. There were no postoperative fatalities. Six died, from six months to three years after the operation. The influence of the splenectomy seemed to be most favorable in patients with hemolytic jaundice, essential thrombopenia or Banti's disease. It is possible that the resistance to tuberculous infection is reduced after this operation.

Treatment of Echinococcosis of the Lung.—Bressot operated on eight of eleven patients with hydatid cysts in the lungs. None of them died after the operation. In one instance, there was recurrence of the cyst, five months later. The operation is justified only with superficial and fully developed cysts. Local anesthesia, with procaine, should be preferred to chloroform. A long intercostal incision is better than a short incision with resection of a rib. One of the patients has been lost to sight; in the others, recovery persists from seven months to over four years. Bressot details the diagnostic signs of the affection.

Clinica Medica Italiana, Milan

57: *89-192 (April) 1926*

*Arterial Hypertension. G. Gherardini and M. Brasi.—p. 89. C'cn
Myelosis in Relation to Pernicious Anemia and the Hemorrhagic Diatheses. A. Esposito.—p. 123.
*Calcium Metabolism in the Tuberculous. G. Ferretti.—p. 149.
Is Tannin-Glycerin a Dependable Drug? L. Salazar.—p. 163.
*Glycemia Curve in Cirrhosis of the Liver. E. Puxeddu.—p. 174.

Clinical and Experimental Study of Arterial Hypertension.—Gherardini and Brasi tested with various drugs a patient with hypertension of renal origin and three without nephritis, recording the variations in the systolic, diastolic and capillary pressures and the relations between them. The lack of balance between the systolic and diastolic pressures and other phenomena convinced them that there must be some peripheral factor influencing them. The capillary pressure and the arterial pressure seem to be quite independent of each other, but not antagonistic. Their photomicrograms confirm the primary hypertrophy of the vessel muscle in nephritic hypertension and the secondary foci of fibroid degeneration. They tabulate for comparison the modifications induced by epinephrine, pituitary extract, pilocarpine, atropine and papaverine. The capillary pressure is above normal in nephritic hypertension but not in hypertonia. It is still dubious whether the hypertension is due to an essential hypertonia or to hypertension in Kylin's sense. Wide daily variations in the arterial pressure were frequently observed, even with nephritis.

Calcium Metabolism in the Tuberculous.—Ferretti's analysis of eight cases has demonstrated that there is no inevitable decalcification in the course of tuberculosis. The soil is not decalcified as the French school claims. The elimination of calcium by the bowel far surpasses that by the urine.

The Glycemia Curve in Cirrhosis of the Liver.—Puxeddu found in five patients with cirrhosis of the liver that the dextrose content of the blood, fasting, was about the normal figure. On various diets, and with test ingestion of 100 Gm. of dextrose, fasting, the reaction differed from the normal. It was wavering instead of regular as in the healthy, the rise in the glycemia being preceded by a drop, followed by a rapid ascent. The decline is slow, and the previous figure is not reached until in at least three and a half hours. The glycemia curve is far more instructive than the glycosuria curve, which is often misleading.

Folia Clinica Chimica et Microscop., Milan

1: 1-60, 1926

*Blood Ammonia as Gage of Liver Function. R. Burchi.—p. 3.
Study of Intestinal Chemism. R. Gualtier.—p. 36.
*The Bacteriophage. L. Villa.—p. 52.
The Wassermann Reaction in Concentrated Serums. L. Villa and C. Lucchini.—p. 58.

Ammonia Content of Blood as Gage of Liver Function.—Burchi found in tests on three healthy persons and three with congestion of the liver, that the ammonia content of the blood was twice as high in the latter group, and it was more than four times higher in two patients with cirrhosis of cancer of the liver. After ingestion of 10 Gm. of ammonium citrate, the ammonia content of the blood increased in these groups, respectively, proportionally in half an hour. He reiterates that the ammonia content of the urine throws little light on liver functioning, but the spontaneous and induced ammonia content of the blood seems to be a dependable gage of the functional capacity of the liver.

The Bacteriophage and Collodion Membranes.—Villa relates that the enriched bacteriophage failed to pass through 2 per cent acetic collodion in ultrafiltration. It retained its specific lytic property unimpaired, however, through repeated rinsings with twice distilled water. This allowed complete isolation of the bacteriophage, thanks to the nonpermeability of the filter infiltrated with the collodion.

Studi Neurologici, Turin

301-310, 1926

*Optic Properties of Certain Cells. C. Rizzo.—p. 301.

Optic Properties of the Nuclei of Certain Cells.—Rizzo states that in frozen sections, treated with 5 per cent alcoholic solution of nitric acid (Lugaro), with fixation in paraffin, the nuclei of certain cells display a double polarizing power. It becomes more intense after removal of the paraffin. It is lost again if the section is mounted in balsam. His illustrations show the anisotropism of the entire nucleus of certain cells, and also in other cells in certain conditions of vitality. This double refraction may prove useful in diagnosis and in functional study of the endocrines or tissue cells. The sympathetic ganglions never exhibited this property under any conditions.

Archivos Arg. de Enf. del Ap. Digestivo, Buenos Aires

1: 605-768, 1926

*Chronic Retractile Odditis. D. del Valle and R. D. Dónovan.—p. 605.
Acute Compression of Duodenum by Mesenteric Glands. J. J. Spangenberg.—p. 621.
Recklinghausen's Disease with Cancer. C. Bonorino Udaondo and L. V. Sanguinetti.—p. 635.
*Rove's Epigastric Syndrome in Appendicitis. A. J. Pavlovsky.—p. 649.
Dolichogastria Versus Gastroptosis. T. Martini and J. Comas.—p. 654.
Cholecystography Shows Kidney Too. C. Bonorino Udaondo and E. Lanari.—p. 678.
Stomach Symptoms in Dread Psychoneurosis. Fernández Sanz.—p. 684.
Our Present Knowledge as to Bilirubin. G. P. Goñalons.—p. 693.

Persistence of Symptoms After Removal of Gallbladder.—Del Valle and Donovan say that this may be explained by malfunction of Oddi's sphincter, from retraction entailed by the preceding inflammatory process. In three cases described, clinically normal conditions were restored by stretching the sphincter and providing for drainage. There has been no return of symptoms, the interval since up to three years. In operating on the gallbladder, this sphincter should be investigated. After correction of the results of shriveling in this region, there is liable to be stasis in the duodenum and right colon. When this is the case, supervision and treatment as indicated are required for the rest of life.

Pain in Acute Appendicitis.—Pavlovsky confirms the diagnostic importance of the transient sharp pain in the epigastrium as the initial symptom in acute appendicitis. It occurs with or without vomiting, and it may be forgotten when the iliac fossa syndrome develops. The upper epigastrium is tender, the skin sensitive, and the left rectus muscle is rigid, while all of this syndrome is lacking on the right side at first.

Boletin del Instituto de Med. Exper. Buenos Aires

2: 143-301 (Feb.) 1926

*Irradiation of Egg and Embryo. A. H. Roffo.—p. 143.
*Cholesteremia at Different Ages. A. H. Roffo.—p. 195.
Sarcomas in Fishes. A. H. Roffo.—p. 206.
Chicken Embryo Extract Toxicity. Id. and López Ramirez.—p. 211.
Toxicity of Tumors and Relation to Proteins. Idem.—p. 216.
The Potassium: Calcium Ratio in Cancer Tissues. Roffo and Laserre.—p. 221.
Roentgenography of Stomach and Duodenum. J. C. Landaburu.—p. 231.
Carbon Dioxide in Cancer Blood. Roffo and De Giorgi.—p. 268.

Irradiation of Embryonic Tissue.—Roffo found that the tissues of the chick embryo developed the same as the controls when the irradiation—even with larger than lethal doses—had been applied to the egg. But this did not occur when the embryo had been removed from the egg a day or two before the irradiation, and thus disintegration had begun. The disintegration process could be arrested and the tissues develop the same as the controls if cultures were made of them one, two or twenty-four hours after the irradiation, thus changing the medium before the disintegration process is finished. Fourteen illustrations accompany the article.

The Cholesterol Content of the Blood.—Roffo found in 101 persons tested, aged from 1 month to 94 years, that cholesteremia increased with age after the first year up to the cancer age, and then decreased. During pregnancy the cholesteremia parallels that of the fourth to the sixth decade—the cancer age. This hypercholesteremia of pregnancy is significant in connection with the exceptionally rapid course of cancers in pregnant women.

Archiv für klinische Chirurgie, Berlin

141: 1-214 (May 22) 1926

Leptothrix Mycosis of the Tongue. Roedelius and Brack.—p. 1.
Tumors of the Testicular Vaginalis. S. Rubaschow.—p. 14.
*Histogenesis of Callus. H. Dieterich.—p. 27.
Elephantiasis of the External Male Genitalia. P. Gohrbandt.—p. 44.
*Temporary Interruption of Circulation in the Kidney. Hübner.—p. 51.
*Disturbances of Passage in the Duodenum. L. v. Bakay.—p. 103.
*The *pH* of Joint Effusions. C. H. Lasch.—p. 129.
Action of Magnesium Sulphate. J. B. Woitaschewski.—p. 135.
Oil-Ether Rectal Anesthesia. S. A. Smirnoff.—p. 151.
Development of Collateral Circulation. K. Hirase.—p. 158.
*Treatment of Surgical Tuberculosis. K. Mészáros.—p. 170.
*Metastatic Peritonitis. R. Girgensohn.—p. 196.
The Frontal Sinus. P. Schidlowsky.—p. 204.

Histogenesis of Callus.—In experiments on twenty rats Dieterich became convinced that the osteoblasts in callus are a product of the germinal perivascular tissue. The high grade tissue-forming reaction in the periosteum, seen in his experiments a few hours after fracture of the bone, could hardly be the work of the fully differentiated, functionally worn out cells of the resting periosteum. Only functionally fresh, indifferent cells in connection with the budding capillaries could be expected to work so rapidly. It is thus not the periosteum itself, but the capillaries budding from the old blood vessels which penetrate it, that are the important factor in the regeneration of bone.

Experiments in Clamping the Renal Artery and Vein for a Brief Period.—Hübner applied a clamp for a period of ten, twenty or thirty minutes to the renal artery and vein in 103 rabbits and cats. Functional damage to the kidney was seen in a rise in residual nitrogen and retention of water. Examination from one day to seven months after the operation showed general hyperemia, extravasation of blood into the parenchyma, hemorrhages in the capsule and areas of necrosis in the parenchyma. The large vessels and the glomeruli were wholly or almost wholly unaffected. The severity of the circulatory disturbances, especially the necrosis, was directly influenced by the length of time that the clamp had been applied. The disturbances lasted from five to six months. The conditions of the operation on the animals are comparable to those of nephrotomy on the human being, and in this connection the warning may be justified that clamping the renal artery and vein for longer than twenty minutes may produce severe circulatory disturbances.

Disturbances of Passage in the Duodenum.—Bakay reviews his observations under this head during the past ten years. The causes, as shown at operation in twelve cases, included compression from a carcinomatous lymph gland, kinking of the duodenojejunal flexure from adhesions, Treitz' hernia, pressure by the root of the mesentery (in one case, after encircling the duodenum, it was caught in a scar of the diaphragm caused by hernia), and cancer of the pancreas. Above the site of the obstruction the duodenum was greatly dilated, and the stretched portion had in nearly all cases sagged to the pelvis. Spastic contraction of the upper jejunal loop, of psychic origin, was diagnosed in one case. In a case of gastroptosis, the descending portion, which did not sag with the stomach, was compressed by the lesser omentum.

Hydrogen Ion Concentration of Joint Effusions.—In twenty-seven specimens, mostly from the knee joint, Lasch found that the reaction in acute cases was around the neutral point, with a tendency toward the acid side, while that in chronic cases was decidedly alkaline. The p_H appears to bear no relation to the underlying disease except in so far as this influences the duration of the effusion.

Treatment of Surgical Tuberculosis, with Special Regard to Its Pathology and to the Histogenesis of the Tubercle.—Mészáros holds that in the lymphocyte, which is the only cell of foreign origin in the primary tubercle, are concentrated in large measure the defensive forces of the organism. Our efforts must therefore be directed toward increasing its numbers. Means to this end are the climate of high altitudes, sunlight and iodine. Phototherapy must be regulated strictly to the patient's strength. Iodine in any way and in any form in which it may be made to enter the body stimulates the production of lymphocytes. He uses it to paint large areas of skin, and also in the form of intramuscular injections of iodiodoform glycerin. Iodides administered internally do not seem to act so well. But the iodine treatment also must be regulated with great care to the reactive strength of the patient. He has had excellent results from iodoform glycerin injections in cold abscesses, and regards the glycerin itself as possessing curative powers.

Metastatic Peritonitis.—Girgensohn describes eight cases of peritonitis, the metastatic nature of which was clear. The patients were all children. Three cases were caused by the pneumococcus, three by the streptococcus, and two by the staphylococcus; all but one of the last two were diffuse. The portal of entry was the lymphatic apparatus of the pharynx in three of the pneumococcus and streptococcus cases. One of the staphylococcus cases followed an otitis. Two of his patients recovered, in one the organism was the pneumococcus, in the other the staphylococcus. The onset is usually stormy, with symptoms of general infection on the first day. Pneumococcus peritonitis usually attacks little girls; the reason is not known. Streptococcus peritonitis is nearly always fatal.

Folia Haematologica, Leipzig

32: 177-261 (May) 1926

*Probable Error in Blood Counting. T. Brandt.—p. 177.
Variations in the Leukocyte Count. F. Michailow.—p. 196.
The High Color Index in Pernicious Anemia. E. Komiya.—p. 201.
Case of Microlymphoidocytic Leukemia. Gordon and Chesney.—p. 221.
*Cell Composition of the Bone Marrow. Weiner and Kaznelson.—p. 233.

The Probable Error in Blood Counts.—Brandt calculates the average error with different hematologic methods, and insists on the importance of estimating and allowing for it in serial tests. He says that the differential blood count is one of the most undependable methods in science. It seems to be applied without any strict critical evaluation of the results.

The Cellular Composition of the Bone Marrow.—Weiner and Kaznelson comment on the instructive details to be learned from puncture of the sternum in blood diseases. They tabulate them from thirty-five cases. Only with a true blood disease does the bone marrow show pronounced cellular changes. They correspond to the type of the disease. In pernicious anemia, megalocytes and erythrogonia appear in large numbers, but they disappear during the remissions.

Zeitschrift f. d. ges. Neurologie u. Psychiatrie, Berlin

102: 325-624 (May 11) 1926

Toxic Action from Spirochetes by Way of Cerebrospinal Fluid. A. Hauptmann.—p. 325.
Discovery of Center for Vision. S. E. Henschen.—p. 368.
*Angiospasm and Heart Spasms. G. Peritz.—p. 395.
Encephalography and Foramen of Monro. A. Rosenstein.—p. 420.
Modes of Reaction of the Brain. H. Krisch.—p. 425.
Rotatory Nystagmus in Semiblindness. J. Ohm.—p. 444.
Psychologic Study of Seventy Exhibitionists. Staehelin.—p. 464.
Reaction Time to Senseless and Purposeful Stimuli. Allers.—p. 548.
Gage for Physical Types in Psychiatry. M. P. Andreew.—p. 554.
Nature of Obsessions. E. Herzig.—p. 574.
Arteriosclerosis in the Brain. M. Kodama.—p. 597.
*Expressive Movements in Psychanalysis. H. Schwerdtner.—p. 620.
Electric Responses in Grafted Nerve. O. Schwab.—p. 622.

Heart Spasms.—Peritz has noted a heart spasm as the precursor of epileptic seizures in a number of cases. He explains how this throws light on tonus in general and on intermittent claudication. There is evidently some functional disturbance in the heart muscle, some vascular spasm, and similar spasms in parts of the brain would explain the epileptic seizure. His attempts to relieve the heart spasm with caffeine demonstrated that the epilepsy was improved by it also. Patients who had been having two or three seizures a week, have them only at six or eight week intervals when they take 0.2-0.3 Gm. of caffeine three times a day, plus 0.025 Gm. of phenobarbital. Karger has also reported excellent results from caffeine in treatment of epilepsy in children. Peritz ascribes this to the vessel-dilating action of caffeine. The angiospastic condition affects only certain organs or parts of organs. If it occurs in the central nervous system, the area involved fails to receive its due oxygen and nourishment; the resulting symptoms differ with the region involved, and according as the disturbances are due to irritation or to paralysis of the cells. Angiospasm is one of the main symptoms in spasmophilia in adults. Heart spasms are encountered almost exclusively in persons belonging to this category. Besides caffeine, alkalis and oxygen aid in overcoming the angiospasm.

Expressive Exercises in Psychology.—Schwerdtner remarks that the conventions of civilization are restricting physical movements more and more, and making them monotonous. The vogue of the dance is the reaction to this. There is a subconscious longing for a more natural physical expression of emotions. He uses this in psychotherapy, telling the patient to express in movements the theme of some musical work or the like. It is psychanalysis by acts instead of words, and he seeks to influence the mind by training in motor expression of emotional complexes.

Zeitschrift für Immunitätsforschung, etc., Jena

47: 97-212 (May 5) 1926

Normal Horse Serum as Antistaphylolysin. T. Benedek.—p 97.
The Chemoreceptor Theory. R. Schnitzer.—p. 116.
A Lability Reaction in Serum of Immune Horses. J. Teichmann.—p. 134.
Identity of Pneumococci and Streptococci. R. Stanka.—p. 141.
Infection of Bacteria with Bacteriophages. K. Suzuki.—p. 143.
*Typhoid Infection in the Rabbit. W. Jelin.—p. 199.

Typhoid Infection in the Rabbit.—In seven experiments on rabbits injected with typhoid bacilli, Jelin found that the intoxication of which the animals died was due to endotoxins freed by the destruction of the micro-organisms, which, after an initial rapid increase in the blood, disappeared therefrom in a few hours. He was able to rule out body fluids and the microphages as the agents of destruction of the bacilli, and to locate that process in the cells of the reticulo-endothelial tissue. On blocking this tissue with injected india ink, the increase of the bacilli in the blood and body fluids went on unchecked, but without injury to the animal. Endotoxins injected into a rabbit with blocked reticulo-endothelial tissue proved harmless to the animal, which suggests that the endotoxins are able to produce intoxication only in connection with the reticulo-endothelial cells.

Ugeskrift for Læger, Copenhagen

88: 433-456 (May 6) 1926

*Arteriosclerosis. A. Faber.—p. 433.
Sanocrysin in Pulmonary Tuberculosis in Adults. L. Sayé.—p. 438.
Experimental Hermaphrodism. H. Seemann.—p. 443.
Traumatic Neurosis Versus Vertigo. C. Gram.—p. 445.

Arteriosclerosis in Man and Animals.—Faber shows that small doses of epinephrine, bacterial toxins and food containing much cholesterol modify the nourishment of the vessel walls in animals, and are able to induce changes identical with those in arteriosclerosis in man. It seems to be a benign proliferative and degenerative process that begins early in life and regularly progresses. The course is speeded up at times by exogenous factors. He thinks that, in future, treatment will be more along the line of regulation of the diet to ward off mechanical factors. Even slight cholesteremia might entail a mechanical element.

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STANDARDIZATION OF SCARLET FEVER ANTISTREPTOCOCCUS SERUMS [*]

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AND
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At present, the antitoxic titer of scarlet fever antistreptococcus serums is determined by the blanching of the rash in scarlet fever patients, following the intracutaneous injection of serum, as developed first by Dochez [1] and later also by Blake and Trask,[2] or by the reactions induced in susceptible persons by mixtures of toxin and serum injected intracutaneously, as developed by the Dicks.[3] Attempts to devise a satisfactory in vitro method have not been successful.

While the tests on human subjects have been essential in establishing definite standards for measuring the antitoxic value of the serums, they are proving impracticable as routine procedures for standardization. Toxin-antitoxin tests on normal persons are impracticable for the following reasons: the difficulty of securing subjects susceptible to the toxin but not hypersensitive to horse serum; the objection to the repeated injection of foreign serum; the large number of injections that should be made on each person to permit an accurate titration, and the fact that variations in individual susceptibility to the toxin make it desirable to titrate each serum on a comparatively large group of persons. Likewise, with the blanching test, the difficulty of finding a sufficient number of cases with a suitable rash, the difficulty in securing a sharp end point, and the variations in reactions observed even under the most favorable conditions, limit the possibilities of this method. The objection to the injection of horse serum in persons also applies.

After considerable effort, it has been possible, during the last three months, to test one of our serums in only twelve cases of scarlet fever. In two of these, the rash had faded before readings could be made; and, in another, hypersensitiveness to serum, even in high dilutions, interfered with the readings. In three instances, no definite blanching occurred with any of the dilutions of serum tested, the lowest being a 1:2,500 dilution in one case, and a 1:100 in the other two. Definite blanching was observed in the remaining six cases in dilutions of serum varying from 1:5,000 to 1:200,000. In one instance, blanching occurred only in dilutions of 1:5,000 or lower. In another case, it occurred with a 1:200,000 dilution, the highest tested. In the most recent test, a 1:160,000 dilution of serum induced slight blanching. Although it is probable that, under the most carefully controlled conditions, much more uniform and accurate results might be obtained, this series of tests nevertheless illustrates the practical difficulties of the blanching method.

In a third method of titration of scarlet fever streptococcus toxins and antitoxic serums which has been under study in this laboratory for nearly two years, the goat is used as the test animal.[4] During this time, a large number of streptococcus toxins were titrated on goats, and toxin neutralization tests on these animals were used to determine the potency of all trial bleedings from horses under immunization and for the preliminary standardization of serums for therapeutic use. About eighty trial and whole bleedings were tested.

Fourteen of the seventeen goats used for the titration of serums were very satisfactory. A few of these goats showed a slight hypersensitiveness to horse serum or to broth, but this did not interfere with the titrations. Of the three goats that were unsatisfactory, one proved to be so sensitive to serum, even in high dilutions, that no readings could be made, and, with the two others, the reactions to the test dose of toxin used were so slight that it was practically impossible to estimate the titer of the serums.

It was soon found that different goats varied slightly in their susceptibility to the toxin, and that, in order to have an accurate basis for comparison of serums titrated on different goats, it was necessary to make control tests on each animal with a serum of known potency.

With sixteen serums intended for therapeutic use, confirmatory tests were made on satisfactory human subjects. The titer of these serums, as determined by tests on human subjects and on goats, was practically the same in each case, with one exception. The titer of this one serum was slightly lower by the test on the goat than by that on the human subject.

As a result of these studies, a procedure for the standardization of scarlet fever antistreptococcus serums on the goat has been developed, which appears to offer a more accurate, uniform, reliable and practical method of titration than do either of the methods on human subjects. The chief disadvantages in the use of goats have been the difficulty of securing a sufficient number of suitable animals, and the fact that they become hypersensitive to horse serum, so that the same animal cannot be used repeatedly for titrating serums.

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[*] From the Division of Laboratories and Research, New York State Department of Health.

[*] Read before the joint meeting of the American Association of Pathologists and Bacteriologists and the American Association of Immunologists, April 2, 1926, Albany, N. Y.

1. Dochez, A. R., and Sherman, Lillian: The Significance of Streptococcus Hemolyticus in Scarlet Fever, J. A. M. A. **82**: 542 (Feb. 16) 1924.

2. Blake, F. G., and Trask, J. D.: Observations on Therapeutic Value of Scarlatinal Antitoxin, New York State J. Med. **25**: 1093 (Dec. 15) 1925.

3. Dick, G. F., and Dick, Gladys H.: Therapeutic Results with Concentrated Scarlet Fever Antitoxin, Preliminary Report: Preparation, Standardization and Dosage of the Antitoxin, J. A. M. A. **84**: 803 (March 14) 1925.

4. Kirkbride, Mary B., and Wheeler, Mary W.: Reactions Induced by Intracutaneous Injections of Toxins of Streptococci from Scarlet Fever, Proc. Soc. Exper. Biol. & Med. **22**: 86-87, 1924; Studies of the Toxins of the Hemolytic Streptococci Associated with Scarlet Fever, J. Immunol. **11**: 477-497 (June) 1926.

The first objection can, in time, be met by contracting in advance with breeders of a satisfactory type of goat. The second is of minor importance, since from fifty to sixty injections can be made on a single animal at one time, thus permitting the titration of from ten to fourteen different serums. Furthermore, it has usually been possible to make a second series of tests on the same animal within three or four days, at which time the hypersusceptibility to horse serum has not developed sufficiently to interfere with the titrations of trial bleedings or the preliminary tests of serums. Very recently, further titration tests with serums on one or two goats which had received no injections of toxin or serum for about two months suggest that, after such a period of rest, some goats may again become serviceable.

In our experience, full grown goats from 2 to 4 years of age, with a clear white skin, have been found most suitable for the intracutaneous test. They are apparently more susceptible than young goats, and more tests can be made on each animal. Pure bred or grade Saanen goats, which are usually white, have proved most satisfactory, although both Angora and common American goats have also been used. The latter, however, do not usually have white skins. It is perhaps advisable to avoid having goats in close proximity to horses, since it is possible that such contact might induce hypersusceptibility to horse proteins.

The method consists of comparative tests of the test serums with a standard serum against a test dose of a standard toxin, made, at the same time, on the same animal under carefully controlled conditions.

The first step was the selection of a standard toxin as the basis for the standardization of a standard serum. For this purpose, a highly potent, stable toxin, preferably produced by a single strain of streptococcus possessing broad antigenic activity, was considered essential. The Dochez strain of streptococcus, N. Y. 5, already in use in this laboratory as the standard, most nearly approached these requirements. A toxin produced with this strain was therefore selected for the standard and carefully titrated on a number of human subjects in comparison with the U. S. Hygienic Laboratory standard Dick toxin, which is prepared from two strains.

A highly potent, unconcentrated scarlet fever antistreptococcus serum was then selected for the standard serum and was titrated on a number of persons against our standard toxin and also against the U. S. Hygienic Laboratory standard Dick toxin. The titer of the standard serum was found to be 200 units per cubic centimeter according to the unit value suggested at an informal conference held in Washington, D. C., in May, 1925; that is, that 1 unit of antitoxin neutralizes 100 human skin test doses of toxin. The serum has since been tested at intervals for a period of more than nine months without evidence of appreciable deterioration. Part of this standard serum has now been preserved with glycerin, and frequent tests are made on both the preserved and the unpreserved serum.

*Result of the Titration of Scarlet Fever Antistreptococcus Serum 32 in Comparison with Standard Serum 28 as Tested on the Goat and on Human Subjects**

	Amounts of Serum and Toxin Injected in 0.1 Cc. of Mixture		Reactions in Goat 31 at 18 Hours	Reactions in Human Subjects at 24 and 48 Hours						
	Serum	Toxin		Reading	1	2	3	4	5	6
Serum 32	1:30,000	1:40,000	No reaction	24 hours	No reaction	No reaction	V. Sl. Rd. 0.5 × 0.5 cm.	No reaction	No reaction	V. Sl. Rd. 0.5 × 0.5 cm.
				48 hours	Not read	No reaction	Not read	Not read	No reaction	Rd. 1 × 1 cm.
	1:40,000	1:40,000	No reaction							
	1:50,000	1:40,000	V. Sl. Rd. 1 × 1 cm.	24 hours	V. Sl. Rd.	No reaction	Rd. 1 × 1 cm.	No reaction	No reaction	V. Sl. Rd. 1 × 1 cm.
				48 hours	Not read	No reaction	Not read	Not read	Rd. 1 × 1.5 cm.	Rd. 2 × 2 cm.
	1:60,000	1:40,000	V. Sl. Rd. 2 × 2 cm.							
Standard serum 28	1:10,000	1:40,000	No reaction							
	1:20,000	1:40,000	V. Sl. Rd.	24 hours	No reaction	No reaction	V. Sl. Rd. 0.5 × 0.5 cm.	No reaction	No reaction	No reaction
				48 hours	Not read	No reaction	Not read	Not read	No reaction	Rd. 0.5 × 0.5 cm.
	1:30,000	1:40,000	Sl. Rd. 2 × 2 cm.							
Standard toxin 52	....	1:80,000	Sl. Rd., Sl. Sw. 2 × 2 cm.							
	....	1:40,000	Sl. Rd., Sl. Sw. 3 × 3 cm.	24 hours	Rd., Sl. Sw. 2.5 × 2.5 cm.	Sl. Rd. 2 × 2 cm.	Rd., V. Sl. Sw. 2.5 × 2.5 cm.	Sl. Rd. 2 × 2 cm.	Rd., Sw. 2 × 2 cm.	Rd. 3 × 3 cm.
				48 hours	Not read	Fading	Not read	Not read	Fading	Fading
	....	1:20,000	Sl. Rd., Sl. Sw. 3.5 × 3.5 cm.							
Heated toxin Control................		1:20,000	No reaction†	24 hours (at 1:40,000)	No reaction	No reaction	No reaction	No reaction	No reaction	No reaction
				48 hours	Not read	No reaction	Not read	Not read	No reaction	No reaction
Broth control..........		1:20,000	No reaction†							
Serum control 1:1,000		....	No reaction	24 hours (at 1:2,000)	No reaction	No reaction	No reaction	No reaction	No reaction	No reaction
				48 hours	Not read	No reaction	Not read	Not read	No reaction	No reaction

* From these tests the titer of serum 32 was estimated as approximately 400 units per cubic centimeter.

† These controls were included in a previous test on this goat.

Having established the titer of the standard toxin and of the standard serum in terms of the human subject, a parallel series of titration tests was made to determine their reactions in the goat, which was to be used as the test animal in future work.

Evidence of marked instability had been observed in some of our streptococcus toxins, especially those of high initial potency, while the serums were apparently much more stable. It was therefore decided to adopt the serum as the practical standard of measurement, and to titrate new lots of standard toxin against the standard serum, although this serum must be standardized originally against a standard toxin selected as representative. Moreover, because of variations observed in titrating the same serum against different toxins, it was considered more accurate to base the test dose of standard toxin on its combining power with a definite dose of the standard serum, rather than on a definite number of skin test doses of toxin. The test dose of toxin, therefore, has been defined as the greatest amount of toxin that will just fail of neutralization with a test dose of the standard serum (either 1/10 or preferably 1/100 unit) in from eighteen to twenty hours. Such a mixture will usually induce a very slight redness, about 0.5 to 1 cm. in diameter.

Although, theoretically, the use of a test dose of toxin based on 1/10 unit or more of antitoxin should give more accurate results than a test dose based on 1/100 unit, in our experience the test dose of toxin based on 1/100 unit of antitoxin has proved more satisfactory. Thus, while tests with serums titrated against both test doses of toxin usually agree very closely, recent experience has indicated that the lower dilutions of serum required in titrating against the larger test dose of toxin may frequently induce serum reactions in goats not sensitive to higher dilutions. However, when goats are used that are not highly susceptible to the toxin, larger doses of toxin are to be preferred.

To determine the potency of test serums, varying doses of serum combined with a test dose of standard toxin are injected, in 0.1 cc. amounts, intracutaneously into goats, control tests being made at the same time with mixtures of the standard serum and standard toxin, and with standard toxin, heated and unheated, and with uninoculated toxin broth and serum alone. Tests on trial bleedings and preliminary tests of whole bleedings are usually made on one animal only. Serums to be distributed for therapeutic use are tested on at least two animals, and the results are controlled, from time to time, on human subjects.

Goats found to be susceptible to high dilutions of the standard toxin are selected for the test, and the hair is very carefully removed from the sides of the chest and abdomen by clipping and by the use of a barium sulphide and starch depilatory. This is done several hours before the injections are made or on the previous afternoon.

Three or four dilutions of the test serum are prepared, the desired doses being contained in 0.05 cc. Thus, for a serum estimated at approximately 300 units per cubic centimeter, the dilutions prepared are 1:1,000, 1:1,500 and 1:2,000, each 0.05 cc. containing, respectively, 1/20,000, 1/30,000 and 1/40,000 cc. of serum. One cubic centimeter of each serum dilution is then combined with 1 cc. of a dilution of standard toxin containing one test dose in 0.05 cc. Control mixtures of standard serum and toxin containing 1/50, 1/100 and 1/150 unit of antitoxin and one test dose of the standard toxin are prepared similarly. The same precision is used in preparing and combining the dilutions as in the standardization of diphtheria and tetanus antitoxins. All mixtures of toxin and serum are allowed to stand for at least one-half hour before being injected, but no change has been noted up to three hours. The dose given is 0.1 cc. Further control injections are also made with three dilutions of the standard toxin containing one half, one, and two test doses in 0.1 cc.; with heated toxin (two test doses heated for one hour at 100 C.) and with uninoculated toxin broth alone and each serum alone, the doses being equivalent to the largest amount of broth or of each serum respectively present in mixtures of toxin and serum.

Readings are made in a bright light after from eighteen to twenty hours, the degree of redness and swelling and the size of the area in centimeters being noted. The reactions induced by the mixtures containing the test serums are compared with the reactions induced by mixtures containing the standard serum and also with those induced by the toxin, serum and broth controls. The serum and broth controls are usually negative, but slight reactions may occur, especially with low dilutions of serum, and these must be taken into account when interpreting the results.

The estimated potency of the test serum is based on the mixture of serum and toxin that induces a reaction slightly less than, or equal to, that induced by the mixture containing the test dose of standard serum (1/100 unit). At least one dilution of the test serum should completely neutralize the toxin. If two or more of the higher dilutions induce very slight reactions, similar to that induced by the standard serum, the titer is based on the mixture containing the greatest amount of serum. When therapeutic serums are titrated, should the tests on the different goats show variations, further titrations are made on other goats. This is, however, seldom necessary. The titer of serums can usually be determined to within from 50 to 100 units with the present scale of dilutions. In the case, however, of serums with a titer considerably below 100 units, especially if they are concentrated, the method has proved less satisfactory, as the result, in part at least, of serum reactions induced by the low dilutions of serum.

Comparative titrations with the same serum against the Dochez standard toxin and against the U. S. Hygienic Laboratory Dick toxin have given similar results. However, much lower dilutions of the Dick toxin are usually required, since it appears to be less potent on the goat.

The results of the titration of one serum tested both on goats and on human subjects is shown in the accompanying table.

The method, as outlined, has now been in routine use for more than six months, during which time satisfactory tests of forty trial and whole bleedings[5] have been obtained on nine goats. The results on a tenth goat proved unsatisfactory because the animal was hypersensitive to serum. These tests are in addition to those of the eighty serums tested during the two years that the methods of standardization have been under study.

THE IDENTIFICATION OF THE STREPTOCOCCUS OF SCARLET FEVER *

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In 1920, I[1] reviewed the literature on agglutination of streptococci found in scarlet fever and showed by means of immune sheep serums that 92 per cent of the streptococci in the acute stage of scarlet fever and 100 per cent of those from erysipelas belonged to distinct biologic groups, which could be differentiated from one another and from the hemolytic streptococci in other infections. These conclusions were reached by the study of opsonification, agglutination, absorption and protection experiments. These and later studies demonstrated that the streptococci specific for scarlet fever began to disappear as early as the second week of the disease, but that they persisted much longer (six weeks) in patients with discharges. It was found that complications beginning after the third week were generally not due to scarlatinal streptococci. Specific scarlet fever streptococci were also isolated from the pus of infections (finger, burn, vaccination lesion and lochia in puerperal sepsis) followed by scarlet fever. It was also shown that persons associated with scarlet fever might develop tonsillitis without an exanthem and harbor scarlatinal streptococci. Streptococci specific for scarlet fever were isolated from eating utensils (fork, spoon and cup) used by scarlet fever patients and also from the outside of a face mask of the nurse in attendance. The conclusion was drawn that opsonification and agglutination tests with immune serum were helpful in the identification of scarlet fever streptococci.

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[5] All the serums tested, with the exception of 17, have been unconcentrated. Retests on several potent unconcentrated serums, after from six to ten months, have given no evidence of appreciable deterioration; but, in retests of one concentrated serum which had become cloudy after a year, a definite decrease in titer was noted. In tests with concentrated serums prepared by other laboratories, marked discrepancies between the recorded titer and that obtained on both human subjects and on goats were found in several instances. Since these discrepancies would appear to be far in excess of the limits of error of the methods of standardization employed, the possibility of these concentrated serums being unstable must be considered.

* From the John McCormick Institute for Infectious Diseases.

[1] Tunnicliff, Ruth: Specific Nature of Hemolytic Streptococcus of Scarlet Fever, J. A. M. A. **74**: 1386 (May 15) 1920; Further Studies on Specificity of Streptococci, ibid. **75**: 1339 (Nov. 13) 1920; J. Infect. Dis. **29**: 91 (July) 1921; **31**: 373 (Oct.) 1922.

Similar conclusions concerning the specificity of streptococci from scarlet fever have been reached from agglutination and agglutination absorption experiments with immune rabbit serum by Bliss,[2] Gordon,[3] Stevens and Dochez,[4] Dochez and Sherman[5] and Eagles.[6]

Birkhaug[7] has verified, for both scarlet fever and erysipelas streptococci, the accuracy of the agglutination and agglutination absorption tests, by ingenious intradermal local passive immunity experiments. On the other hand, Williams[8] and her co-workers have found that only 40 per cent of the streptococci from scarlet fever belong to one group.

Since the etiologic relation of the streptococcus to scarlet fever appears assured, it has seemed worth while to continue the work on streptococcus agglutination for identifying scarlatinal streptococci. The Dicks[9] recommend the neutralization of toxin with immune serum as a means of recognizing scarlet fever streptococci. The precipitin reaction described by Rosenow[10] may later prove of value in the diagnosis of scarlet fever streptococci.

AGGLUTINATION WITH CONVALESCENT HUMAN SERUM

Dr. Herrold and I[11] have shown that, by concentrating convalescent scarlet fever serum by a method devised by him, we could by agglutination tests differentiate scarlatinal streptococci from others. It had previously been found by Bliss[12] that agglutinins could not be demonstrated in scarlet fever serum before the eighteenth day. We tested fifteen scarlet fever serums, eight convalescent diphtheria serums and one serum from a woman who had had scarlet fever two years previously, with eight strains of streptococci from scarlet fever and seven strains from other sources. On account of the difficulty of keeping animals immune, and the rapidity with which some serums lose their antibodies, it was thought that concentrated human serum might be more convenient for identifying scarlatinal streptococci for diagnostic purposes and therefore these experiments have been continued.

The streptococci were grown for twenty-four hours in 1 per cent dextrose broth mixed with ascites fluid 1 : 3; the culture was then centrifugalized and the cocci suspended in salt solution. The scarlet fever serum was concentrated by precipitation of the euglobulin and the lower pseudoglobulin fractions with a saturated solution of ammonium sulphate, in the proportion of 2 cc. of serum to 1.2 cc. of ammonium sulphate solution; after standing at room temperature thirty minutes, the tube was centrifugalized, the fluid poured off, and the tube inverted and flamed to precipitate the ammonium sulphate and serum still left on the sides of the tube, in order to minimize the amount of ammonium sulphate which would be mixed with the solution of the precipitate. The precipitate from 2 cc. of serum was then dissolved in 0.4 cc. of salt solution, and this solution designated as concentrated serum.

The concentrated serums were diluted five times with salt solution, and an equal amount of bacterial suspension was added to each. Final dilutions of concentrated serum lower than 1 : 5 gave confusing results, on account of partial coagulation of the mixture, when incubated for three or four hours at 55 C. The agglutinating mixtures as well as the control tubes with salt and ammonium sulphate solutions were incubated for four hours at 55 C. and read. With concentrated serum, little agglutination occurred before three or four hours. Concentrated serum was found to retain its agglutinative power for not more than two months, generally about six weeks.

As a rule, eight strains of streptococci were tested with each serum, the same strain being examined with several different scarlatinal and nonscarlatinal serums.

Fourteen scarlet fever serums collected during the fourth week of the disease, two serums from suspected cases of scarlet fever, four from tonsillitis, three from measles patients and one from diphtheria were concentrated with ammonium sulphate and tested for their agglutinating power on hemolytic streptococci. Twenty-five strains were isolated from acute cases of scarlet fever; two strains from cases of tonsillitis in nurses of scarlet fever patients; one strain from the throat in a doubtful case of scarlet fever; eleven strains from the throats of patients with acute tonsillitis; two strains from the throat of diphtheria patients; one strain from measles, and one from a finger of a person who had previously had scarlet fever, now accidently infected with a streptococcus culture from scarlet fever.

The fourteen scarlet fever serums agglutinated all the scarlatinal streptococci, those from the two nurses of scarlet fever patients, from the finger infected with scarlet fever streptococci, from the suspected case of scarlet fever, and from one of the cases of tonsillitis. The serum from a suspected case of scarlet fever with typical onset and some eruption, without desquamation, agglutinated the streptococcus from the patient's throat and three known scarlatinal strains, but did not agglutinate four strains from other sources; the serum of the second suspicious case did not agglutinate any of the streptococci tested. The remaining serums failed to agglutinate either scarlatinal or other streptococci, in one instance of tonsillitis not even the homologous streptococcus, indicating that in tonsillitis demonstrable streptococcus agglutinins may not develop.

The streptococcus isolated at entrance and two weeks later from a patient with tonsillitis was agglutinated by the scarlet fever serums, indicating that this patient had scarlet fever without an eruption or was a carrier of the scarlet fever streptococcus.

A rabbit was immunized, as described later, first with killed and then with living nonmannite fermenting streptococci from an infected vaccination wound followed by scarlet fever. The serum of this rabbit agglutinated in high dilutions all the strains agglutinated by the concentrated convalescent scarlet fever serums, but not the other strains, the two serums being equally specific.

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[2] Bliss, W. D.: Bull. Johns Hopkins Hosp. **31:** 173 (May) 1920; J. Exper. Med. **36:** 575 (Nov.) 1922.

[3] Gordon, M. H.: Brit. M. J. **1:** 632 (April 30) 1921.

[4] Dochez, A. R., and Stevens, F. G.: Proc. Soc. Exper. Biol. & Med. **21:** 39, 1923; J. Exper. Med. **40:** 253 (Aug.) 1924; Occurrence of Throat Infections With Streptococcus Scarlatinae, Without a Rash, J. A. M. A. **86:** 1110 (April 10) 1926.

[5] Dochez, A. R., and Sherman, L.: Significance of Streptococcus Hemolyticus in Scarlet Fever, J. A. M. A. **82:** 542 (Feb. 16) 1924.

[6] Eagles, G. H.: Brit. J. Exper. Path. **5:** 199 (Aug.) 1924.

[7] Birkhaug, K. E.: Bull. Johns Hopkins Hosp. **37:** 307 (Nov.) 1925.

[8] Williams and others: City of New York Dept. of Health Weekly Bull. **14:** 106, 1925.

[9] Dick, G. F., and Dick, Gladys H.: Method of Recognizing Scarlet Fever Streptococci, J. A. M. A. **84:** 802 (March 14) 1925.

[10] Rosenow, E. C.: The Precipitin Reaction, J. A. M. A. **86:** 9 (Jan. 2) 1926.

[11] Herrold, R. D., and Tunnicliff, Ruth: J. Infect. Dis. **34:** 209 (March) 1924.

[12] Bliss (footnote 2, second reference).

One scarlatinal strain isolated from the blood, a mannite fermenter, was agglutinated in high dilutions by the serum of the rabbit immunized with a nonmannite fermenter scarlet fever streptococcus. This is in accord with the results of Ruediger,[13] who found that the fermentation of mannite and agglutination did not necessarily correspond, some nonmannite fermenters being agglutinated by the serum of a sheep immunized with a mannite fermenter. His table shows, too, that the serum of a sheep immunized with a nonmannite fermenter also agglutinated a mannite fermenter. The Dicks,[14] however, were unable to demonstrate any cross agglutination between the two strains of scarlatinal streptococci studied by them and the serum of sheep immunized with each of the two, one being a mannite fermenter, the other not.

AGGLUTINATION WITH IMMUNE RABBIT SERUM

As pointed out in a previous paper, to obtain an immune rabbit serum specific for scarlet fever streptococci I [15] found it essential to give only a few doses; otherwise, polyvalence developed. The first dose consisted of the twenty-four hour growth in 10 cc. of ascites dextrose broth, centrifugalized, suspended in salt solution, and the cocci killed, commonly by heat. Generally it is necessary to give small numbers of living organisms from time to time to keep up the production of antibodies. Two strains of scarlet fever streptococci and two strains isolated from patients in no way associated with scarlet fever are used as controls in each experiment, in order to determine the specificity of the serum. If the nonscarlatinal strains are agglutinated, the serum is set aside as not specific. If a serum agglutinates these two nonscarlatinal strains in only low dilutions, higher dilutions of the serum may be used for identification purposes. The experiments are also controlled with normal rabbit serum. For the suspensions the streptococci are grown in ascites dextrose broth twenty-four hours, centrifugalized and suspended in phosphate broth of p_H 7.5. It is sometimes necessary to transfer an organism several times in fluid mediums to obtain a smooth suspension, but no strain has been encountered which eventually did not grow homogeneously. The agglutination test is made at 55 C. for one hour.

Three rabbits were now immunized as just described with scarlet fever streptococci and each streptococcus strain tested, as a rule, with two different serums. Dr. Katharine Howell of Michael Reese Hospital and Dr. T. T. Crooks isolated the majority of the cultures used in these experiments.

Twenty-two hemolytic streptococcus strains were isolated from nonscarlatinal patients, one from erysipelas, ten from throats of persons with acute tonsillitis, three from throats of persons closely associated with scarlet fever, four from abscesses, one from blood, two from spinal fluids, and one from pleuritic fluid. None of these streptococci were agglutinated by immune rabbit serum; hence, they were not of scarlatinal origin.

Immune rabbit serum agglutinated all the sixteen strains of hemolytic streptococci isolated from scarlet fever patients at the onset of the disease, fourteen from throats, one from a dog bite infection followed by scarlet fever, and one from an infected eye. One of the throat cultures was isolated four days before the appearance of the eruption.

Thirteen strains of hemolytic streptococci isolated from carriers and persons with acute tonsillitis without a rash were also found by agglutination tests to belong to the scarlatinal group of streptococci. Six of these cultures were from persons closely associated with scarlet fever patients, five from sore throats and one from the infected finger of an intern (Dick negative), who had had scarlet fever two years before. Scarlet fever streptococci were isolated from three persons with subacute tonsillitis, one of whom had been out of quarantine from scarlet fever five weeks and two, eight weeks; from the sputum of a boy one year after his attack of scarlet fever, and from the subacutely inflamed tonsils of a child who gave a history of a previous attack of tonsillitis followed by otitis media. One strain was isolated from a medical student with an acute tonsillitis without eruption, developing four days after exposure to scarlet fever. Scarlatinal streptococci were still present in his throat three weeks later. Streptococci specific for scarlet fever were isolated from the throat of a man (Dick negative) with an acute sore throat and a transient erythema, whose cihld developed a typical toxic case of scarlet fever four days later. Scarlet fever streptococci were also cultivated from the child's throat. It seemed probable that the child contracted scarlet fever from the father, as it had not been otherwise exposed.

These observations and those of Bliss and of Stevens and Dochez show that scarlet fever streptococci may persist long after the usual period of quarantine. Bliss [12] found them at the end of a year after an attack of scarlet fever. Stevens and Dochez [16] isolated them in 47.3 per cent of patients at the end of thirty days' quarantine, most of them in patients with inflamed tonsils. From my experiments, it appears that persons who have previously had scarlet fever may later become infected with scarlatinal streptococci. The recent experiments of Stevens and Dochez [17] corroborate those of Bliss,[18] Tunnicliff [19] and Rosenow [10] that infections of the throat with scarlatinal streptococci may occur without an eruption and show that agglutination reactions and toxin production are closely parallel.

A MODIFIED OPSONIC TECHNIC FOR RAPID DIAGNOSIS OF SCARLET FEVER

It is sometimes useful to be able to make a rapid diagnosis in suspected cases of scarlet fever in which the rash is not sufficiently distinct for a Schultz-Charlton extinction test with immune serum. Since the shortest time possible to identify streptococci by agglutination tests is generally three days after making the original culture, it seemed worth while to try to devise a method of recognizing the cocci in the hemolytic colonies on the original blood agar plate. So far, it has not been possible to use these colonies for microscopic agglutination tests, but they are suitable for suspensions for opsonic experiments. In cultures made early in scarlet fever from throats or discharges, only specific streptococci are present or predominate to such an extent that suspensions made from several colonies are certain to contain the scarlet fever streptococcus. Single colonies may be transplanted and tested later.

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[13] Ruediger: J. Infect. Dis. 3: 755, 1906.

[14] Dick, G. F., and Dick, Gladys H.: Prevention of Scarlet Fever, J. A. M. A. 83: 84 (July 12) 1924.

[15] Tunnicliff (footnote 1, fourth reference).

[16] Stevens and Dochez (footnote 4, second reference).

[17] Stevens and Dochez (footnote 4, third reference).

[18] Bliss (footnote 2, first reference).

[19] Tunnicliff (footnote 1, third and fourth reference).

The following simplified opsonic method has been found useful in identifying streptococci and in testing the opsonic strength of antistreptococcus serums:

1. Normal and immune rabbit serums are heated at 56 C. for one-half hour, to get rid of normal opsonins. The heated serum is more specific than the unheated serum necessary for agglutination tests. Some serums retain their opsonic content for several weeks, sometimes months, and may be kept in the icebox for future use.
2. Equal parts of normal human blood and 2 per cent sodium citrate in salt solution are mixed. Three large drops of blood are sufficient for twelve specimens.
3. Streptococci on the original blood agar plate or from subcultures are suspended in a large drop of salt solution in a petri dish. Thick suspensions are to be avoided in order to escape getting too much phagocytosis for accurate counts.
4. Equal parts of serum, citrated blood and bacterial suspension are mixed in capillary pipets, and the mixtures incubated twenty-five minutes at 36 C. The mixtures are smeared on glass slides, 50 or more polymorphonuclear leukocytes counted and the number of cells taking part in phagocytosis noted (phagocytic index). If the phagocytic index of the immune serum exceeds that of normal serum determined by the same method, it is concluded that the colonies contain scarlatinal streptococci.

The phagocytic index of the immune serum divided by that of normal serum represents the opsonic power of the immune serum.

If the serums have been previously heated, identification of the streptococcus may be made within an hour. Twelve strains of hemolytic streptococci from nonscarlatinal sources gave indexes with immune serum varying from 0.8 to 1.0; sixteen scarlatinal strains gave indexes from 1.6 to 5.5. Cultures giving indexes as low as 1.6 should be tested again. All but one of the strains mentioned were examined by agglutination tests also, and the two methods gave the same results.

CONCLUSIONS

The results of these experiments indicate that concentrated convalescent scarlet fever serums and the serum of rabbits properly immunized with scarlatinal streptococci are equally specific and are helpful in identifying scarlatinal streptococci, in studying doubtful cases of scarlet fever and in discovering carriers.

By making opsonic tests directly with streptococci from colonies on the original blood agar plate, it is possible to detect scarlatinal streptococci sooner than by agglutination or toxin production as now determined.

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Ways of Reaction to Psychic Trauma.—How does an animal react to danger or fear? In one of the three ways—flight, fight or fright. All of these reactions are mainly in the instinctive and emotional level. It may be through conscious perception that fear is roused; but, once aroused, conscious thought and reason take a secondary place in the reactions. The sympathetic nervous system, which is intimately associated with emotion, assumes control. In the case of flight, through the action of the sympathetic, the animal's limbs are flushed with blood, and the whole of its potential energy is focused and directed to speed. The hunted hare has only one motive—to run as it never in its life ran before. I think it must be admitted that nervous fear of company may cause blushing in a young girl without inferring sexual wishes and repressions in her infantile and unconscious life. If flight is checked or is impossible, the animal may seek safety in fight; a cornered rat will turn and fight man or cat. A man, if he cannot escape by flight, may turn and fight with the fury of a Berserker. In the remaining reaction, fright, the object is to escape by concealment. The rabbit crouches down, trusting that the dogs will overlook him; theirs is an actual paralysis of motion and of will. —Davis, A. E.: *Lancet* 2:118 (July 17) 1926.

EXOPHTHALMIC GOITER AND TOXIC ADENOMA

CLINICAL VARIATIONS OF A SINGLE DISEASE*

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It is commonly held that exophthalmic goiter and toxic adenoma are two separate diseases. The distinction between these two diseases seems to be based, in part at least, on a consideration of differences in (1) clinical manifestations, (2) anatomic and histologic alterations in the thyroid and (3) the response to iodine therapy. It is my purpose to discuss the foregoing considerations only as they have a direct bearing on the proposition that exophthalmic goiter and toxic adenoma are two fundamental entities.

CLINICAL CONSIDERATIONS

Exophthalmic Goiter.—There is very little difficulty in recognizing, clinically, cases of classic exophthalmic goiter; the symptoms and signs are too well known to require repetition.

More important in the present discussion are the less typical cases (without adenomatous thyroids) in which there is historical or physical evidence of long standing disability. In such cases there may be questionable eye signs, including exophthalmos; there may be alterations in the blood pressure and pulse pressure that are not in conformity with those said to be characteristic in cases of exophthalmic goiter; there may be mild degrees of nervousness, palpitation, tachycardia, vasomotor disturbances, increased appetite, loss of weight and strength; there may be a preponderance of cardiovascular phenomena (auricular fibrillation, myocarditis, decompensation), and there may be slight diffuse thyroid enlargement with or without thrill or bruit.

Any single clinical manifestation mentioned above may be absent in some cases; hence, none can be considered pathognomonic. In other cases a few or various combinations of these symptoms and signs may be present, but in such mild degrees as to be of no particular significance in the differentiation of these cases from cases of so-called toxic adenoma on the basis of clinical manifestations alone. In certain cases the clinical manifestations, as to both character and degree, simulate very closely those commonly encountered in the clinical state called toxic adenoma, but the absence of adenomas in the thyroid precludes any other diagnosis than that of exophthalmic goiter.

Of equal importance in the present discussion are the cases that present many of the symptoms and signs of exophthalmic goiter and in addition show adenomatosis or adenomatous nodules in the thyroid. In such cases there may be exophthalmos, thrill and bruit in the thyroid, well defined nervousness, palpitation, tachycardia, increased appetite, loss of weight and strength, and other symptoms to such an extent that a diagnosis of exophthalmic goiter cannot be avoided.

In the light of present day teaching, certain questions will naturally arise. Do such patients have one disease (exophthalmic goiter) or two distinct diseases (exophthalmic goiter and toxic adenoma) at the same time? If they have exophthalmic goiter only, what considerations permit us to ignore the presence of adenomas in these cases and yet require us to attach so much significance to adenomas of the same character, so far as can be detected clinically, in the group called toxic adenoma? If we are dealing with two diseases in these cases, what should be the proper procedure with regard to the administration of iodine as a measure preliminary to operation? This question will be considered later in the paper.

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Toxic Adenoma.—There is little difficulty in recognizing, clinically, a certain group of cases, with long standing adenomatous goiter, in which many of the classic symptoms and signs of exophthalmic goiter are absent or present in only a slight degree. The absence of exophthalmos and thrill and bruit in the thyroid; the slight degree or absence of nervousness, palpitation, tachycardia, vasomotor and gastro-intestinal disturbances; the absence of increased appetite and the loss of weight and strength; the increased blood pressure, both systolic and diastolic, with or without increased pulse pressure; the presence or predominance of cardiovascular phenomena (auricular fibrillation, myocarditis, decompensation): these, according to our understanding, constitute the major considerations for a clinical diagnosis of toxic adenoma. The occurrence of a preponderance of these manifestations in a particular case creates a picture that would appear to be fairly definite from a purely clinical standpoint. But in what respect does any single symptom or sign, or any combination of symptoms or signs enumerated above, differ from those previously mentioned in considering atypical cases of exophthalmic goiter?

In the cases of atypical exophthalmic goiter, it was the absence of adenomatous thyroid, whereas in the group now under consideration (toxic adenoma) it is the presence of adenomatous thyroid, that seems to determine the clinical diagnosis. In other words, in two cases of toxic goiter, with symptoms and signs quite similar, the one without adenomatous thyroid is diagnosed as exophthalmic goiter, and the one with adenomatous thyroid is diagnosed as toxic adenoma.

It is seriously open to question whether the clinical presence or absence of adenomatous thyroid furnishes a basis for differentiation that is fundamental. Nor does it appear, from a consideration of the pathologic alterations in the thyroid itself in exophthalmic goiter and toxic adenoma, that we are in any better position to formulate a satisfactory basis for the recognition of two disease entities.

THE THYROID GLAND IN EXOPHTHALMIC GOITER AND TOXIC ADENOMA

Exophthalmic Goiter. — Diffuse parenchymatous hypertrophy and hyperplasia have been considered specific changes in the thyroid in cases of exophthalmic goiter. Years ago, Marine and Lenhardt[1] demonstrated the fallacy of this dogma, yet, in spite of their clear-cut experiments and observations, articles appearing in 1925 tend to perpetuate the error. The fact is that man and lower animals suffering from simple endemic goiter, curable by the simple administration of iodine, present clinically and pathologically, qualitatively and quantitatively, every manifestation commonly considered characteristic of exophthalmic goiter, so far as the thyroid is concerned. Excellent examples of such cases in both man and animals (dogs) have come under our observation within the last two years.

Certainly it cannot be denied that some patients with many of the symptoms and signs of exophthalmic goiter, including exophthalmos, thrill and bruit in the thyroid, and diffuse parenchymatous hypertrophy and hyperplasia, have adenomas in the thyroids. These adenomas may be undifferentiated, partially differentiated, or completely differentiated; they may be single, multiple or diffuse; they may be in a state of hypertrophy and hyperplasia or in a colloid state. It is a singular circumstance that these adenomas, which cannot be distinguished pathologically from adenomas of various forms and states occurring in toxic adenoma and simple endemic goiter, can be totally ignored in cases that necessarily must be diagnosed as exophthalmic goiter, and yet assume such important significance in the formulation of an entirely different disease as is contemplated in the conception of toxic adenoma as an entity.

Toxic Adenoma.—In an extensive experience with pathologic conditions of the thyroid, we have been unable to detect a single quality of adenomatous thyroid tissue that can be recognized as constantly present in toxic adenoma and constantly absent in exophthalmic goiter and simple endemic goiter. In toxic adenoma and simple endemic goiter, hypertrophic and hyperplastic adenomas may be surrounded by nontumorous colloid thyroid tissue; and colloid adenomas, by nontumorous hypertrophic and hyperplastic thyroid tissue.

What relation, if any, exists between adenomatous and nonadenomatous thyroid tissue as regards their capacity for the production of clinical manifestations? So far as we are aware, there is little or no evidence to disprove but considerable evidence to support the view that any physiologic, chemical, pharmacologic, biologic or pathologic potentialities that adenomatous thyroid tissue may have are at least similar to if not identical with those of nonadenomatous thyroid tissue. Under such circumstances, there appears to be very little reason for attributing to adenomatous tissue a propensity for the production of clinical manifestations that would not have their counterpart in nonadenomatous thyroid tissue, and vice versa. There appears to be even less reason for assuming adenomatous and nonadenomatous thyroid tissue to be capable of producing only diametrically opposite clinical phenomena.

From the standpoint of pathologic anatomy of the thyroid there appear to be insufficient grounds for a fundamental distinction between exophthalmic goiter and toxic adenoma as two different entities. We may next consider the effects of iodine therapy.

THE RESPONSE TO IODINE THERAPY IN CASES OF EXOPHTHALMIC GOITER AND TOXIC ADENOMA

The administration of iodine as a preoperative preparation for thyroidectomy in cases of exophthalmic goiter is now quite generally accepted. Our experience is in accord with this principle.

Up to the present time, proponents of the theory that toxic adenoma is an entity in contradistinction to exophthalmic goiter have maintained that iodine is not only detrimental in cases of toxic adenoma, but is the cause of the disease.[2] Whether or not iodine may be the cause of toxic adenoma is immaterial in the present discussion, since it is possible to adduce evidence equally good and of comparable sort to indicate that iodine might play the same rôle in exophthalmic goiter. In the literature concerning the detrimental effects of the administration of iodine in cases of toxic adenoma, too little attention has been directed to the quantity of iodine taken or administered, in relation to the element of time. We know that this is a matter of decided importance in determining the clinical state of patients with exophthalmic goiter at a particular period in the course of the disease.

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[1] Marine, David; and Lenhardt, C. H.: Bull. Johns Hopkins Hosp. **18**: 359-364, 1907; **22**: 217-219, 1911; Further Observations on the Relation of Iodine to Structure of Thyroid Gland in Sheep, Dog, Hog and Ox, Arch. Int. Med. **3**: 66-77 (Feb.) 1909; Effect of Administration or Withholding of Iodine-Containing Compounds in Normal Colloid or Actively Hyperplastic Thyroids of Dogs, ibid. **4**: 253-270 (Sept.) 1909; The Pathologic Anatomy of the Human Thyroid Gland, ibid. **7**: 506-535 (April) 1911; Pathologic Anatomy of Exophthalmic Goiter, ibid. **8**: 265-316 (Sept.) 1911.

[2] "Iodine Hyperthyroidism" (Jackson, A. S.: Boston M. & S. J. **193**: 1138-1140 [Dec. 17] 1925) is not germane to our present discussion, since, according to the author, this condition is neither exophthalmic goiter nor toxic adenoma. It is worthy of note that in forty-nine of fifty cases tabulated by the author, the patients received iodine (quantity not stated) for an average period of 4.9 months each. It would be interesting to speculate as to the outcome in forty-nine patients with typical exophthalmic goiter (without adenomatous thyroids) receiving the same quantity of iodine for the same period of time, particularly if they were subjected to thyroidectomy shortly after a lapse and without resumption of the iodine before operation.

If exophthalmic goiter and toxic adenoma are two separate and distinct diseases, there might be reason for expecting opposite effects from iodine therapy, especially if exophthalmic goiter is considered an essential *dysthyroidism (incomplete saturation of secretion by iodine)* and toxic adenoma is considered a pure form of hyperthyroidism (secretion completely iodized). On the other hand, if exophthalmic goiter and toxic adenoma are different phases, degrees or variations of a single disease, the reaction to iodine should be of the same order in the two forms.

We have found no definite reference in the literature to the possible importance of comparing previously untreated patients with uncomplicated cases of both exophthalmic goiter and toxic adenoma, with regard to their reaction to iodine. This we believe to be a necessary procedure before accepting a reputed but unsubstantiated difference in reaction to iodine as a legitimate basis for the establishment of these clinical states as two diseases.

A careful consideration of what occurs in cases of classic exophthalmic goiter following the administration of iodine for the first time furnishes, we believe, a reasonable explanation for the reputed harmful effects of iodine in cases of toxic adenoma. It is well known that the administration of iodine to patients with exophthalmic goiter is followed by a striking clinical improvement and a decrease of the basal metabolic rate. If, after the period of maximal improvement, iodine is continued in the same quantities for a sufficiently long period of time, the clinical condition becomes aggravated and the basal metabolic rate increases and may return to its original level or even a higher level. If such a patient is not examined during the period of primary improvement but comes under observation during the period of secondary aggravation, iodine might be considered to have a causal relationship to the clinical state. The point to be borne in mind is that the patient has not been observed during the period of primary improvement.

In those patients with adenomatous goiter who come to the clinic in a well defined state of thyrotoxicosis, with a history of having taken iodine as a therapeutic measure or as iodized table salt and having been made worse thereby, do we not lack the very important observation of primary improvement, similar to that observed in cases of exophthalmic goiter, immediately following the institution of the iodine therapy? Are we not seeing such patients during a period of secondary aggravation which followed a period of primary improvement?

That there is a period of primary improvement in such cases is well borne out in our experience. In no *previously untreated* patient with clinical manifestations and state of the thyroid corresponding to what is commonly called toxic adenoma has there failed to be a definite clinical improvement and decrease of basal metabolic rate following the administration of iodine. In our experience, improvement has been quite as consistent in previously untreated patients with toxic adenoma as in previously untreated patients with exophthalmic goiter.

Under such circumstances, even if there were no other considerations, how can it be expected that we accept blindly the present general teaching that iodine *is absolutely* contraindicated as a measure preliminary to operation in cases of so-called toxic adenoma?

INDICATION FOR ADMINISTRATION OF IODINE

The condition of the thyroid gland itself determines our one and only indication for the administration of iodine to any patient with goiter. As long as the thyroid is hypertrophic and hyperplastic, iodine in proper *quantities is indicated,* irrespective of clinical grouping of patients and irrespective of the presence or absence of adenomas. When the thyroid is in a colloid or resting state (involution, not degeneration), there is no indication for iodine so far as thyroid function is concerned, and its ill advised use may be decidedly harmful.

We are thoroughly convinced that the well considered use of iodine, as a measure preliminary to operation, is not only safe but also beneficial in cases of so-called toxic adenoma as well as in cases of exophthalmic goiter. The ill effects of iodine are justly attributable to a lack of proper appreciation of the chief indication for its use and a lack of understanding of just what it may be reasonably expected to accomplish.

The questions of dysthyroidism and hyperthyroidism are so intimately involved with the response to iodine therapy as to merit a brief discussion of these hypotheses.

DYSTHYROIDISM AND HYPERTHYROIDISM IN EXOPHTHALMIC GOITER AND TOXIC ADENOMA

The term dysthyroidism is being used to imply the delivery to the general circulation of a product of thyroid secretion *incompletely saturated with iodine* that *is considered toxic and responsible for the principal* clinical phenomena of exophthalmic goiter.

Dysthyroidism, in the sense indicated above, seems to be based, in part at least, on the following considerations:

1. The thyroid is said to be in a state of overactivity, and is known to contain an abnormally low quantity of iodine, which is an essential constituent of the normal thyroid hormone. The overactivity is indicated by the increased vascularity and the hypertrophy and hyperplasia of the epithelial elements.

The objection to this assumption is that the thyroids of man and animals with simple endemic goiter may present the same indications of dysthyroidism, and yet the incompletely iodized products of secretion effect no such clinical manifestations as those occurring in cases of exophthalmic goiter.

2. A further assumption that in cases of exophthalmic goiter (dysthyroidism) the general circulation is being flooded by a toxic incompletely iodized product of secretion is based on the observation that patients with this disease to whom iodine is administered improve distinctly, and the benefit of such therapy is ascribed to saturation of the secretion by iodine.

That patients are thus benefited may be accepted as a fact, but this in itself, in view of equally important considerations to the contrary, does not establish that a toxic incomplete secretion is being saturated and rendered nontoxic.

If exophthalmic goiter is a pure form of dysthyroidism in the sense of an intoxication resulting from an overproduction of a perverted or incompletely iodized secretion and is greatly benefited by the administration of iodine, what explanation is there for the secondary aggravation of clinical symptoms and increase of basal metabolic rate that occurs when iodine is continued in the same quantities for a sufficiently prolonged period of time?

It might be urged that exophthalmic goiter (without adenomatous thyroid) is susceptible of conversion from a state of dysthyroidism into a state of hyperthyroidism by the administration of iodine. Even if future investigations prove this hypothesis well founded, so far as our present problem is concerned it is to be borne in mind that the conversion is brought about without the intervention of adenomatous thyroid tissue.

If toxic adenoma is a pure form of hyperthyroidism, in the sense of an intoxication resulting from an overproduction of a normal or completely iodized secretion, what essential difference is there between the state of a patient with this condition and the state of a patient with exophthalmic goiter during the period of secondary aggravation (induced hyperthyroidism) that results from the prolonged administration of iodine? So far as our present problem is concerned, we appear to be confronted with the dilemma that hyperthyroidism occurs in patients with adenomatous thyroids and in patients without adenomatous thyroids.

There is the alternative of assuming the simultaneous occurrence of two disease states, dysthyroidism and hyperthyroidism, in the case of exophthalmic goiter; there is certainly no excuse for denominating the second state (hyperthyroidism) as toxic adenoma, since the thyroid is not necessarily adenomatous. If we are at liberty to assume two diseases in the case of exophthalmic goiter, why may we not assume the same two disease states, dysthyroidism and hyperthyroidism, in the case of toxic adenoma? So far as alterations in the thyroid are concerned, we have found nothing inconsistent with the possible occurrence of dysthyroidism in toxic adenoma. It has been demonstrated in our own experience that there is a period of primary improvement following the administration of iodine in cases of toxic adenoma. This we have found to be the rule and not the exception in previously untreated patients. We have, therefore, at least one indication of dysthyroidism in cases of toxic adenoma quite as cogent as that which has been one of the chief supports of the view that exophthalmic goiter is an essential dysthyroidism; namely, primary improvement following the administration of iodine.

COMMENT

The matter presented in this paper represents the crystallization of a point of view which we have held for some years regarding certain aspects of the problem of toxic goiter. After the introduction of compound solution of iodine (Lugol's solution) by Plummer as a measure preliminary to operation in cases of exophthalmic goiter, and in view of the increasing tendency to recognize two types of toxic goiter as distinct diseases, it became necessary, in order to test the validity of our conceptions, to obtain data on the effects of the administration of iodine in the group of cases called toxic adenoma. Our first opportunity presented itself in July, 1924. Since then, our routine procedure has been the administration of compound solution of iodine as a preoperative measure in all cases, adenomatous and nonadenomatous, in which there was an increase of basal metabolic rate and other clinical evidence sufficient for a diagnosis of "thyrotoxicosis," provided an operation was to be performed.

We have regarded hypertrophy and hyperplasia of the thyroid as a sufficient indication for iodine in any case. When clinical evidence of hypertrophy and hyperplasia was not definite or was questionable, we have considered iodine to be indicated, provided the patient had not been taking iodine in large quantities or for a prolonged period of time immediately before coming under observation. Even if the patient had been taking iodine, the drug has not been entirely discontinued. Indeed, our experience is in accord with the observations of others, that the discontinuance of iodine for a time before operation is not a wise procedure.

Up to the present time, we have observed no untoward reaction from iodine other than slight aggravation following primary improvement in a few cases. As noted in the preceding discussion, we have observed comparable response to iodine in previously untreated cases of both exophthalmic goiter and toxic adenoma.

It is a matter of considerable importance to recognize that the quantity of iodine necessary to bring about the same or comparable clinical response and decrease of basal metabolic rate is much less in cases of toxic adenoma than in cases of exophthalmic goiter. This we attribute to the difference in degree of hypertrophy and hyperplasia of the thyroid in the two conditions. We emphasize this fact in order that any one who might be interested in this subject may avoid the mistake of administering large quantities of iodine for long periods of time to patients with thyrotoxicosis and slight degrees of hypertrophy and hyperplasia of the thyroid. Favorable response and unfavorable response are of the same character whether the thyroid is adenomatous or nonadenomatous. The present indications are that the thyroid can utilize iodine to the point of saturation without harmful effects to the patient. But beyond this point clinical experience shows that iodine may be harmful rather than beneficial, whatever may be the variety of toxic goiter treated.

CONCLUSIONS

1. We have been unable to recognize a single symptom or sign that is necessarily pathognomonic for exophthalmic goiter as opposed to toxic adenoma.

2. We have been unable to recognize a single anatomic or histologic alteration in the thyroid, in either the adenomatous or the nonadenomatous portion of the gland, that is necessarily pathognomonic for exophthalmic goiter as opposed to toxic adenoma.

3. There are equally good reasons for speaking of dysthyroidism in cases of toxic adenoma and exophthalmic goiter.

4. There are equally good reasons for speaking of hyperthyroidism in cases of exophthalmic goiter and toxic adenoma.

5. The degree of hypertrophy and hyperplasia of the thyroid determines the quantity of iodine that will be tolerated, without untoward effects, in both exophthalmic goiter and toxic adenoma.

6. The reaction to iodine is fundamentally the same in cases of exophthalmic goiter and toxic adenoma.

7. We have no alternative but to regard exophthalmic goiter and toxic adenoma as clinical variations of a single morbid state.

HIGH JEJUNOSTOMY IN INTESTINAL OBSTRUCTION

A CLINICAL REVIEW AND EXPERIMENTAL RESULTS *

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Since the writings of Victor Bonney,[1] considerable interest has been manifested in jejunostomy as a treatment of acute intestinal obstruction and paralytic ileus. It has been advocated especially in those severely toxic cases in which a more radical operation to relieve obstruction would be dangerous to life. Bonney writes:

> I hold strongly that all cases of paralytic intestinal obstruction (whether primary or secondary to an organic obstruction or to peritonitis), when advanced to the stage of fecal, or short of fecal, intestinal vomiting, should be treated by jejunostomy. By making an opening into the jejunum in a case of fecal or intestinal vomiting, the source of the vomit is directly tapped and free drainage of the toxic material is established. No patient should be allowed to die with fecal vomiting if it is possible to perform this operation. Its effect in many cases has been remarkable; in all of them there has been an immediate cessation of vomiting, and all the patients have recovered.

Handley[2] is somewhat doubtful about the value of jejunostomy, and advises jejunocolostomy with cecostomy. Rankin[3] thinks that, in some cases of severe acute peritonitis, jejunostomy will find a field of usefulness. McKinnon[4] is an enthusiastic advocate of jejunostomy in acute intestinal obstruction and peritonitis. He also uses it with other abdominal operations to prevent postoperative ileus and vomiting. Under such conditions he terms it complemental jejunostomy. Lee and Downs[5] state that jejunostomy should be used, alone or in combination with other procedures, in all cases of acute mechanical intestinal obstruction of more than twenty-four hours' duration. Summers[6] advises draining the small bowel as high up in the jejunum as recognizable when vomiting has reached the fecal odor stage. Walker,[7] Taylor,[8] Wilkie[9] and C. H. Mayo[10] recommend jejunostomy in obstruction of the bowel. Many surgeons emphasize the value of enterostomy in ileus, but do not urge jejunostomy.

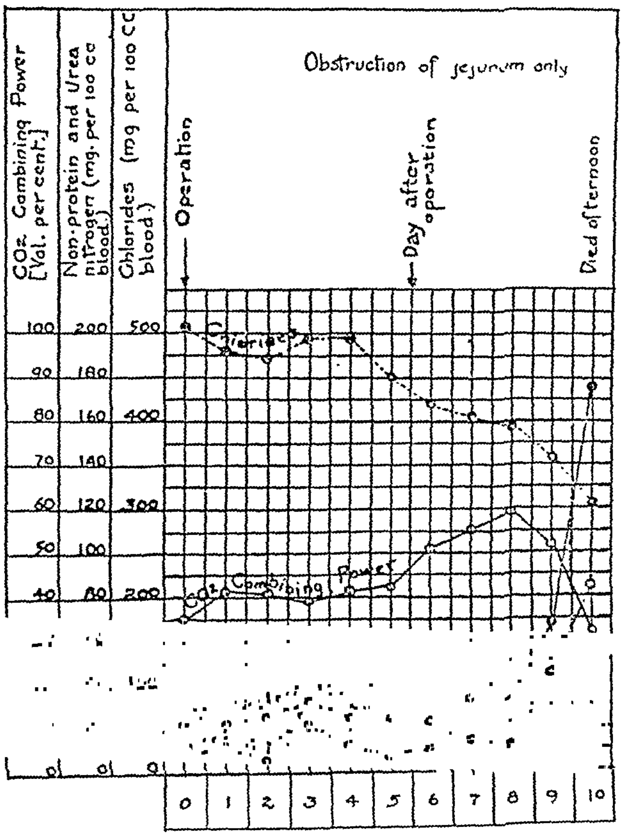

Chart 1.—Changes in the chemical reaction of the blood after obstruction of the jejunum 12 inches below the ligament of Treitz.

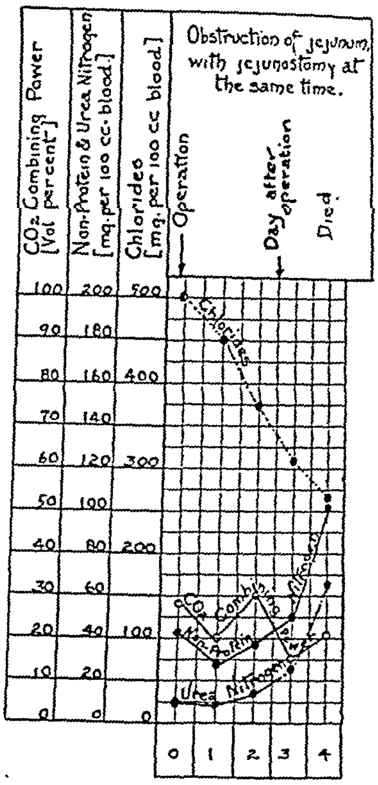

Chart 2.—Obstruction of the jejunum and jejunostomy at the same time: a rapid fall in chlorides and rise in nonprotein and urea nitrogen.

During the last three years we have been much interested in the chemical changes of the blood occurring in pyloric[11] and high intestinal obstruction,[12] and the relation of these changes to sodium chloride therapy.[13] These conditions show a constant rise in the nonprotein nitrogen and urea nitrogen, a fall in the chlorides, and a rise in the carbon dioxide combining power of the plasma. Following these observations, experimental jejunostomy[14] was tried to compare its therapeutic effect with that observed after the administration of sodium chloride and to determine, if possible, why jejunostomy is considered of clinical value in the treatment of intestinal obstruction.

In a series of experiments on dogs, we have studied the effect of jejunostomy on the chemical changes of the blood and the length of life following high obstruction of the jejunum. Also combined jejunostomy and teratment with sodium chloride was studied. Obstructions were produced under ether anesthesia by sectioning the intestine from 10 to 12 inches below the ligament of Treitz and inverting the cut ends with purse string sutures. All secondary jejunostomies were done under local anesthesia; 0.5 per cent procaine was used. The technic of jejunostomy was a modified Witzel operation with an omental covering sutured over the area. A small rubber tube was used, and in every instance the drainage through the tube was prompt and continuous. Water was permitted by mouth ad libitum. Blood for analysis was withdrawn daily from the jugular vein until the death of the animal. The nonprotein nitrogen,

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* From the University of Kansas School of Medicine.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Bonney, Victor: Brit. M. J. **1:** 583 (April 22) 1916.

[2] Handley, W. S.: Brit. M. J. **1:** 519 (April 8) 1916.

[3] Rankin, F. W.: Kentucky M. J. **21:** 256 (May) 1923.

[4] McKinnon, A. I.: Jejunostomy, J. A. M. A. **77:** 273 (July 23) 1921.

[5] Lee, W. E., and Downs, T. M.: Ann. Surg. **80:** 45 (July) 1924.

[6] Summers, J. E.: Ann. Surg. **72:** 201 (Aug.) 1920.

[7] Walker, I. J.: Boston M. & S. J. **186:** 108 (Jan. 26) 1922.

[8] Taylor, W.: Brit. M. J. **2:** 993 (Nov. 28) 1925.

[9] Wilkie, D. P. D.: Brit. M. J. **2:** 906 (Nov. 28) 1925.

[10] Mayo, C. H.: The Cause and Relief of Acute Intestinal Obstruction, J. A. M. A. **79:** 194 (July 15) 1922.

[11] Haden, R. L., and Orr, T. G.: J. Exper. Med. **37:** 377 (March) 1923.

[12] Haden, R. L., and Orr, T. G.: J. Exper. Med. **37:** 365 (March) 1923.

[13] Haden, R. L., and Orr, T. G.: J. Exper. Med. **38:** 55 (July) 1923.

[14] Haden, R. L., and Orr, T. G.: J. Exper. Med. **43:** 483 (April) 1926.

urea nitrogen, chlorides and carbon dioxide combining power were studied. Any animal showing a complication at necropsy was rejected.

EXPERIMENTAL OBSERVATIONS

Five animals with simple obstruction of the jejunum lived from five to nineteen days. The chemical changes of the blood were similar to those noted in duodenal obstruction, but developed less rapidly. The carbon dioxide combining power showed an increase, but not the marked rise observed in obstruction of the duodenum and pylorus (chart 1).

Average Length of Life in Each Series of Five Dogs

	Days
1. Obstruction of jejunum only (controls)	10
2. Obstruction of jejunum with jejunostomy at same time	3½
3. Obstruction of jejunum, jejunostomy and sodium chloride therapy at same time	5½
4. Obstruction of jejunum with jejunostomy later	9
5. Obstruction of jejunum with jejunostomy and sodium chloride therapy later	13¼
6 Simple jejunostomy 10 inches below ligament of Treitz	3⅗

In a second series of five animals in which obstruction of the jejunum and jejunostomy were done simultaneously, the length of life varied from three to five days. The chemical changes of the blood developed rapidly, and were typical of those found in high intestinal obstruction (chart 2).

Animals subjected to obstruction of the jejunum and jejunostomy simultaneously and treated with sodium chloride solution from the beginning of the experiment lived from three to twelve days. They did not show the chemical changes in the blood characteristic of jejunal obstruction. The administration of sodium chloride solution apparently prevented such changes (chart 3).

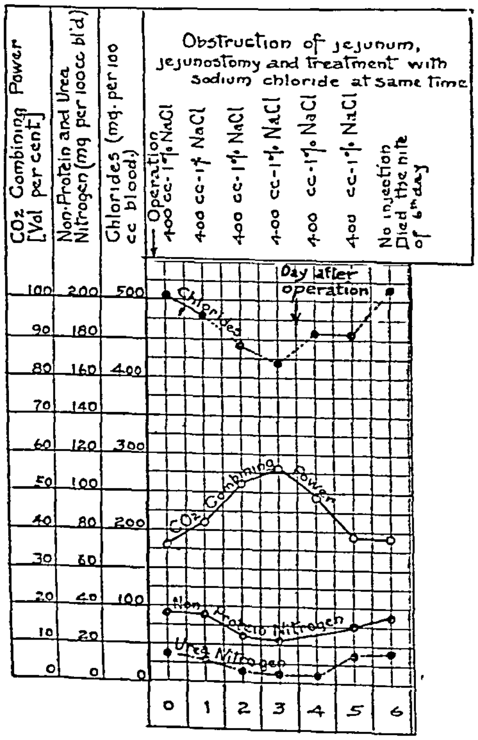

Chart 3.—Same as chart 2, with sodium chloride treatment started the day after operation. This should be compared with charts showing no treatment.

In five dogs with obstruction of the jejunum, jejunostomy was done after the development of a toxemia. The duration of life in the group varied from four to thirteen days. The animals developed the characteristic blood changes of simple jejunal obstruction (chart 4).

In the next series of five dogs, jejunostomy was done after the onset of the toxemia of jejunal obstruction. Sodium chloride was given after jejunostomy in sufficient quantity to keep the blood chlorides within normal limits. These animals did not develop the chemical changes of the blood characteristic of obstruction of the jejunum, and lived from thirteen to eighteen days (chart 5).

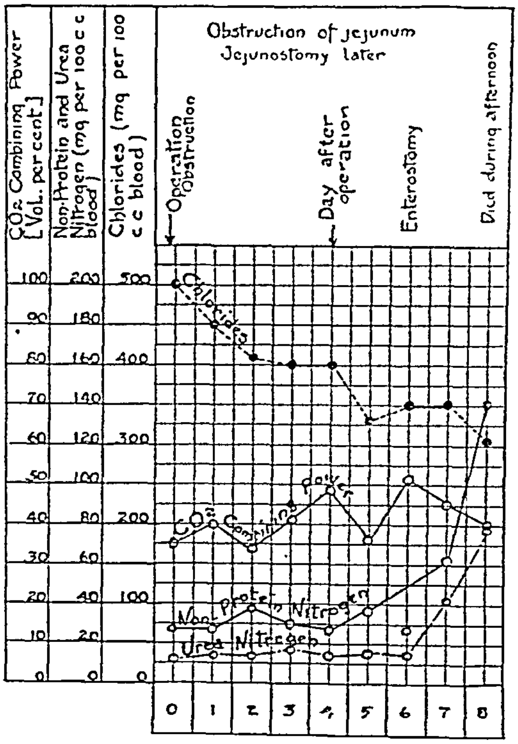

Chart 4.—Obstruction of jejunum with jejunostomy after development of toxemia; drainage of jejunum without apparent effect on the progress of blood chemical changes.

It was found in these experiments that animals having obstruction of the jejunum and jejunostomy together lived a shorter time than those having obstruction alone. This suggested the study of the effect of simple jejunostomy with the interesting observation that six dogs lived only from two to five days following the operation (chart 6). All of these dogs showed a decrease in the blood chlorides and a rapid rise in urea and nonprotein nitrogen. These findings are similar to those reported by Walters, Kilgore and Bollman[15] in experimental duodenal fistula in dogs. Their animals lived from three to four days after duodenostomy.

The danger of duodenal fistula in patients has long been known. In a series of twenty-eight cases collected by Cameron,[16] the mortality was 43 per cent, a death rate equal to that of acute intestinal obstruction.

COMMENT

The average duration of life in experimental obstruction of the upper jejunum is somewhat longer than that following obstruction of the duodenum. Simple drainage of the jejunum results in death more quickly than simple obstruction of the jejunum. In the treatment of experimental jejunal obstruction, jejunostomy not only does not prolong but seems to shorten life. Jejunostomy also does not prevent the development of the characteristic chemical changes of the blood that occur in jejunal obstruction.

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[15] Walters, Waltman; Kilgore, A. M., and Bollman, J. L., Changes in the Blood Resulting from Duodenal Fistula, J. A. M. A. 86: 185 (Jan. 16) 1926.

[16] Cameron, A. L.: Surg. Gynec. Obst. 37: 599 (Nov.) 1923.

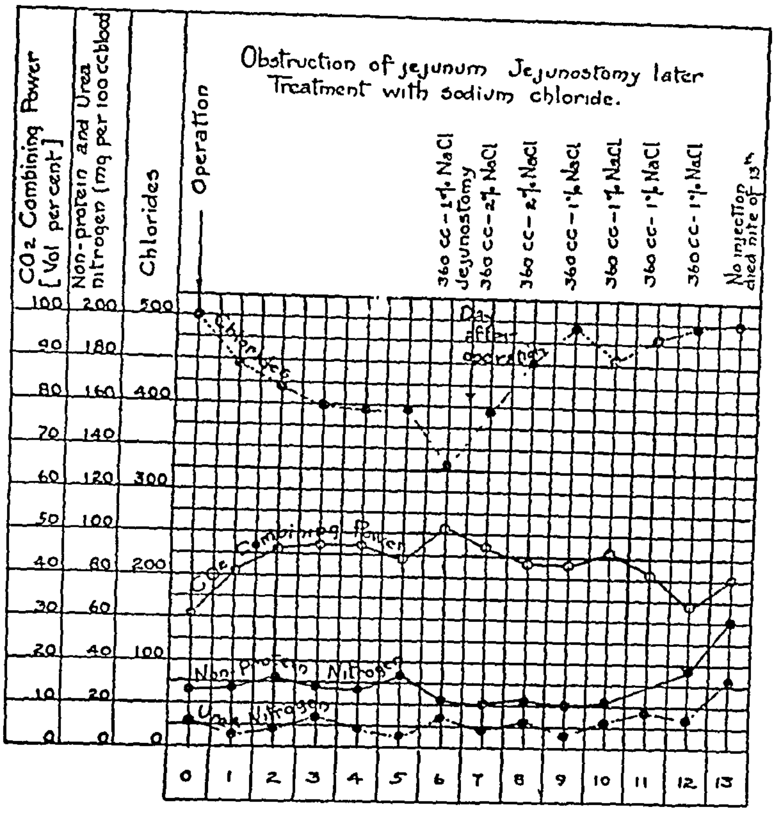

Chart 5.—Same as chart 4, with addition of sodium chloride treatment beginning the day jejunostomy was done. The changes in blood chemistry and length of life should be compared with previous charts.

When these experimental findings are compared with the clinical reports of the value of jejunostomy for intestinal drainage, one hardly knows how to draw conclusions properly. It is possible that the patient does not react like the animal to jejunal drainage. It may also be possible that temporary jejunal drainage is clinically without danger, whereas continuous drainage might result in death. More accurate clinical observations must be made to settle this point.

In presenting these experimental observations, it is not the intention to advise against jejunostomy in the treatment of ileus but to stimulate an effort to determine its true value or danger.

CONCLUSIONS

1. The chemical changes of the blood characteristic of acute obstruction of the jejunum in the dog are not prevented by jejunostomy.
2. Jejunostomy following experimental obstruction of the jejunum has no beneficial effect on the duration of life. Our observations indicate that life may be shortened by early jejunostomy.
3. Treatment of jejunal obstruction with sodium chloride solution tends to prolong life in animals, regardless of jejunostomy.
4. Animals with simple jejunostomy die more quickly than those with obstruction of the jejunum.
5. With the well known danger of duodenal fistula and the rapid death of animals following experimental jejunostomy in mind, we believe that the clinical value of jejunal drainage for obstruction of the small intestine is yet to be proved.

Forty-Seventh Street and Millcreek Parkway.

ABSTRACT OF DISCUSSION

Dr. J. Shelton Horsley, Richmond, Va.: There are so many different problems in intestinal obstruction, some of which have not yet been entirely solved, that a consideration of the subject is always interesting. The work of Foster and Hausler, who have differentiated obstruction into that type in which there is no material interference with the circulation of the bowel and no gangrene, but simple mechanical obstruction, and into the second type in which there is volvulus or gangrene, is valuable. In the second type the symptoms and prognosis are entirely different from those in which there is simple mechanical obstruction, because the injured bowel gives off products similar to those that produce shock. This experimental work of Orr and Haden is important. The fact that dogs die from an enterostomy done high in the jejunum, however, does not mean that an enterostomy low in the ileum in clinical cases of obstruction is without benefit. One of the chief causes of death in high obstruction is dehydration, and naturally high enterostomy or high obstruction drains the body of water very quickly. Another important feature that has been worked out by Orr and Haden is the loss of chlorides in high obstruction. It seems to me that the clinical conclusion to be drawn from this experimental work is that an enterostomy should be made as near the point of obstruction as possible, and not high up in the jejunum by choice, and that it should be made by some technic in which a rubber catheter is inserted obliquely in the intestinal wall so that the drainage from the bowel can be checked by clamping the catheter. Such an enterostomy in which the bowel can be dropped back just beneath the parietal peritoneum will permit the withdrawal of the catheter in about a week or ten days, with little if any leakage of the intestinal contents. If, however, a straight incision is made into the bowel or particularly if the bowel is fixed on the surface of the abdomen, the flow of fecal matter cannot be checked, and such an enterostomy may become exceedingly serious if the obstruction later has been overcome and the enterostomy still drains.

Dr. Thomas G. Orr, Kansas City, Mo.: We did not have time to go into enterostomy. Dogs with a low enterostomy will live at least forty days. This report applies solely to high jejunostomy. There is some question about the value of jejunostomy; hence we offer this experimental work in comparison with clinical experience to stimulate an interest in determining just what danger there may be in doing a jejunostomy. We believe in ileostomy in the treatment of these conditions. As regards the water and chloride, we think the chloride is extremely important. It seems that there is still another factor to be considered in the drainage of the upper intestinal tract besides these two. We have supplied water and chlorides enough to replace the daily loss of weight, but still that does not prevent the death of the animal in a relatively short time.

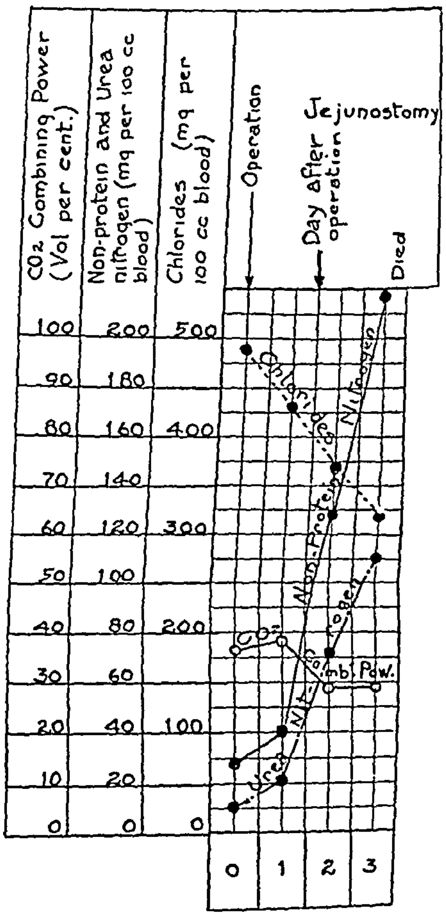

Chart 6.—Simple jejunostomy: length of life in six dogs, from two to five days; rapid changes in blood chemistry.

AN OUTBREAK OF POLIOMYELITIS

APPARENTLY MILK BORNE [*]

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From Dec. 14 to Dec. 25, 1925, there developed in the city of Cortland, N. Y., eight cases of poliomyelitis. All the patients were found by one of us (A. C. K.) to have consumed milk from the same dealer, Mr. G. December 7, seven days before the onset of the first case of this group, a 16 year old boy (case 1) who was working on the dairy farm where the bulk of G.'s milk was produced, became sick with headache, pain in the back and some diarrhea. He vomited and felt feverish but continued at work, milking from eight to ten of the twenty cows on the dairy, though he noticed that his hands were growing progressively weaker, with pain and tenderness in his left arm. On the morning of December 11, after milking three or four cows, he gave up work on account of paralysis of the left upper extremity and was taken to his home in Cortland, where he was seen by his physician, who made a diagnosis of poliomyelitis. This boy had been employed on the dairy farm since Sept. 22, 1925, but visited his home in Cortland practically every Saturday night.

Prior to this apparently milk-borne outbreak there had been what was probably a fulminating case of poliomyelitis (case A) in the town of Virgil, 8 miles from Cortland, and three cases of poliomyelitis in Cortland (cases B, C and D). Three of these four patients had onsets on the same day, October 7, the fourth on October 8, and three of them died. Although the three cases in Cortland itself were all in the eastern half of the city, the two nearest each other (cases C and D, fig. 2) were separated by a distance of approximately one-half mile.

Apart from the cases included in this report, no other cases have been reported in the immediate vicinity of Cortland during 1925, the nearest case being in Groton, 10 miles west. This patient had the onset, September 16, developed bulbar paralysis, and died, September 19. There had also been three cases in the town of Cuyler, 16 miles northeast, two cases in one family—mother and child—the third five days after contact with them. So far as known, neither the Groton nor the Cuyler cases had any connection with those in Cortland. The most recent previous case in the city of Cortland itself was in August, 1924.

During this outbreak no cases occurred which could reasonably be suspected as abortive or nonparalytic cases except in the family of patient D of the October group. About a month after the death of patient D, a 3 year old sister had a high fever, severe vomiting, and complained of pain when lifted. Examination, January 5, failed to elicit any evidence of paralysis. One case was reported, December 26, which, in our opinion, was torticollis. The outbreak naturally caused a great deal of concern on the part of the public, and it is reasonably certain that any considerable number of abortive or suspicious cases would have come to light had they existed. This statement agrees with the opinion of ten or twelve physicians in Cortland with whom we discussed the question, and is borne out by the house to house canvas by nurses who made the census of milk supply.

OCTOBER CASES

Case A.—A boy, aged 8 months, was taken suddenly ill, early in the morning of October 8, with diarrhea and vomiting. He was seen by a physician at 9 a. m., at which time the baby was restless, the eyes were sunken, the rectal temperature was 101 +, the lungs were filled with mucus, and the breathing was short and rapid. Vomiting was projectile in character. He developed convulsions about 4 p. m. that day and died at 5:30. The head was "thrown somewhat back and was rotating from side to side with a fairly constant motion." The cause of death was certified as acute meningitis, though the attending physician states that the diagnosis was very uncertain.

Case B.—A boy, aged 11 years, was taken ill, October 7, developed bulbar paralysis October 9, and died that day. He was an inmate of a children's home caring for approximately forty children, aged from 3 to 15 years. He attended school no. 1, and was in the fifth grade. He had not been out of town. There is more or less constant visiting of the children in this institution by their parents from Cortland and the surrounding country. None of the other children in the home were sick. Milk at this institution was obtained from their own cows and occasionally from Dealer X.

Case C.—A girl, aged 5 years, became ill, October 7, and developed paralysis of the left upper extremity, October 10. She had one sister, aged 13, who was not sick either before or afterward. She attended the kindergarten in school no. 2, lived in a boarding house on the second floor, had not been out of town, and did not associate with either of the other two patients in this series. Her mother sold tickets in the moving picture theater patronized by patient 1 of the December series. Milk was obtained from Dealer Y.

Case D.—A boy, aged 20 months, became ill, October 7. He showed paralysis of the left foot, October 9; there was bulbar involvement, October 11, on which day he died. He had not been out of town; he played with various children in the neighborhood, but not, so far as could be ascertained, with any of the other patients. He had two brothers, aged 4 and 2, and four sisters, aged 9, 7, 5 and 3 years. About the first week in November the girl, aged 3 years, had a high fever and severe vomiting, and complained of pain when lifted. Examination, January 5, failed to elicit any weakened muscles. Older children of the family attended school no. 2. Milk was obtained through a grocery store from Dealer Z.

DECEMBER CASES

Case 1.—A boy, aged 16, became ill, December 7; there was paralysis, December 11. His symptoms have already been noted. Examination, January 5, showed complete paralysis of the left upper extremity except the finger flexors, only a trace of contraction in the right triceps, marked weakness of the right deltoid and biceps, and some weakness of both right and left peroneals. For about two months prior to the onset he had been working on the dairy farm of his uncle, Mr. P., 1½ miles northeast of the city. He milked from eight to ten cows as usual during the period from Dec. 7 to Dec. 10, 1925. He milked three cows with the right hand only, December 11. He visited his mother's home in Cortland about one block distant from patient C every Saturday evening, and had been to a moving picture show where the mother of patient C sold tickets, November 28 and December 5. He is quite certain that he had not been in direct contact with patient C or her sister at any time. His sister stated that she was acquainted with the sister of patient C and had been with her on one or two occasions since patient C's recovery; but the latter statement is doubtful. The boy was a mental defective and had been an inmate of the Rome State School. His sister also showed evidence of mental defect.

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[*] From the Division of Communicable Diseases of the New York State Department of Health.

[*] Participation in this study was made possible by the support of the Harvard Infantile Paralysis Commission, and by a fund privately donated to the Vermont Department of Public Health.

Case 2.—A boy, aged 15 months, became ill on the evening of December 14, with moderate fever, moderate to severe headache, slight constipation, retraction of the head, and drowsiness. Resistance to anterior flexion of the spine was not noted. He vomited, December 18. He was paralyzed in both arms and both legs, December 18. The family had been in Cortland only since December 2, coming from Pennsylvania by automobile. He was the only child in the family; he lived with the father and mother in two rooms upstairs, and there was a family of two adults and one child, aged 9, downstairs. The house was not far from the children's home where patient B died six weeks before their arrival in Cortland. Each family in this house took 1 quart of G.'s milk daily. The baby and father both drank milk, the baby about one cupful daily. The 9 year old child downstairs also drank one cup daily, but had no symptoms except a slight cold about December 7. There had been no known contact, direct or indirect, with any of the other patients in the city or elsewhere. The child downstairs attended school 1, grade 4-B.

Case 3.—A man, aged 22, living in a rooming house in the city, became ill at noon, December 16. Paralysis of the ascending type appeared December 18, with death occurring that night from bulbar involvement. The patient drank milk three times daily at a restaurant which was supplied with 35 quarts of G.'s milk each day. So far as known, he had been in contact with no other patients. He lived about half a block distant from patient 8, who became ill, December 25, and the block in which the rooming house was situated was immediately back of that of patient 6, although on the street farthest removed from him.

Case 4.—A girl, aged 2, the youngest of a family of six, including two adults and three boys, aged 9, 7 and 4, had not previously been ill but was not a well nourished looking child. She was paralyzed in both arms, December 19; it was noticed that the right leg also was paralyzed, December 21. The family took 2 quarts of G.'s milk daily, which the child drank rarely, though she used it on cereals every day. All the other children in the household drank a cupful every morning. The boy, aged 7, was very fond of it and drank more. No others in the household were sick at any time. The father, who was a laborer, had not been to any place from which poliomyelitis had been reported. The family occupying the other side of the house in which the patient lived—consisting of three children of school age and two adults—used 2 quarts of the same milk daily, but none of them were sick. The brothers attended school 3.

Case 5.—A girl, aged 3, previously in good health except for a slight indisposition, December 11, when she was drowsy, was pale about the mouth and had no appetite, became ill, December 18. Spinal puncture was performed on the evening of December 19, the cell count being about 100. Paralysis developed, December 20, in both upper extremities. The father was a garage mechanic. The family took 1 quart of G.'s milk daily, of which this child probably drank less than two glasses during the period from December 7 to December 11. The family consisted of two adults and one other daughter, aged 1. The 1 year old child drank as much milk as the one attacked.

Case 6.—A boy, aged 11, became ill, December 18, with general malaise, but no definite symptoms. He stayed home from school and remained in bed. He was apparently well, December 19. December 20, on return from Sunday school about 1 p. m., he complained of slight headache and vomited. December 21, it was noticed that he had difficulty in swallowing. Mucus and saliva collected in his throat which he was unable to cough up. Death occurred from respiratory paralysis about 3 a. m., December 22. The father was in charge of the wet wash of a steam laundry. There were no other children. This family did not use G.'s milk, but it was learned a day or two after his death that he was at a party, December 12, which was attended by about thirty persons, both adults and children. Five quarts of G.'s milk were used at the party, and though most of it was used by adults in coffee, the boy drank two glasses of it. He attended school 2, grade 5.

Case 7.—A boy, aged 17, became ill about 4 p. m., December 19, with high fever, severe frontal headache, constipation, vomiting, pain in the back, and stiffness of the neck, jaws and legs. When examined, December 21, there was no retraction of the head, and very slight if any resistance to anterior flexion of the spine. Otherwise the examination was apparently negative, although the muscles were not tested at that time. He was reexamined, January 6, and found to have marked weakness of both masseter muscles, of the left triceps and moderate paresis of the right and left hamstrings and left anterior tibial group. The family consisted of two adults and three other children, all girls, aged 13, 4 and 2 years. The two younger children had also been sick—the younger attacked, December 14, with slight fever, pain and tenderness in the right arm and leg, afterward shifting to the left elbow and wrist. December 21, the left wrist and left ankle were swollen and edematous, and there was pain on motion. The child had a vulvovaginitis of some two or three weeks' standing. It was thought that she might be paralyzed because of inability or unwillingness to roll over in bed. It is believed, however, that this was because of the pain associated with movement of the affected parts. Her sister, aged 4, also had vulvovaginitis; she had no symptoms except pain and tenderness in the left shoulder. While at Sunday school, December 20, the teacher noticed that she had difficulty in getting the left arm into the coat sleeve. Reexamination of both these children, December 22 and 23, showed no evidence of paralysis but decided evidence of arthritis in the younger child. The child, aged 4, had in the meantime apparently recovered. Examined again, January 5, there was still evidence of arthritis in the child, aged 2, none in the child aged 4, nor was there any evidence of muscle weakness found in either one. The boy aged 17, as well as the father of this family, worked in a factory where G.'s milk was sold to the extent of 75 quarts daily. Three quarts of the milk were also taken at the house. The boy drank the milk at home and from a pint to a quart of it daily at the plant. The parents and the other children in the family drank milk, as well as using it on cereals. There was no known contact with other cases. The child aged 13 attended school 1, grade 5-B.

Case 8.—A boy, aged 7, who lived about half a block from patient C, though so far as could be ascertained he had never been in contact with her, became ill, December 25, in the afternoon. He was found to be paralyzed, December 29. The spinal fluid cell count was 34. He was one of a family of eight, consisting of two adults, two brothers, aged 8 and 4 years, and three sisters, aged 10 years, 6 years and 8 months. The family took 2 quarts of G.'s milk daily. The patient drank more of it than any of the others. He attended a morning show for children, December 19, at the theater where patient C's mother sold tickets. Otherwise there was no history of direct or indirect contact. He attended school 2, grade 2-B.

Case 9.—A boy, aged 19, became ill, December 25; paralysis was noted, December 28, of both arms and both legs except the toe and finger flexors. December 28, the spinal fluid cell count was about 100 cells. The family consisted of two adults, the patient and a brother, aged 7. The patient was a teamster. The house was about half a block distant from that of patient 3; they were not acquainted. Aside from the fact that he removed ashes from the laundry adjoining the house of patient 6 and had seen and probably spoken to the father of patient 6 while doing so, he gave no evidence of direct or indirect contact with any other patient. The family did not take G.'s milk. The mother, however, worked in the restaurant previously referred to in connection with case 3. She drank milk there occasionally and at times brought home articles of food for family consumption. Among these, rice and bread puddings made with G.'s milk sometimes figured. She also took food which came back from the tables uneaten, and there is the possibility that she took home some food left uneaten by patient 3. The younger brother visited the restaurant frequently and usually drank two or three glasses of milk—often twice daily—and had not been sick.

CASE 10.—A girl, aged 6, became ill, December 26, with slight fever. The following day she had moderate headache and epigastric pain. She had been sleeping near an open window; the neck was stiff and the head was held with the chin toward the left shoulder, resisting movement in any direction. December 29, the spinal fluid cell count was said to have been between 300 and 400, with increased pressure. She did not develop paralysis. Examination, January 6, was negative, except for a slight weakness of the left sternomastoid muscle. The family consisted of the father, mother and one servant, in charge of Salvation Army headquarters; she had not been in contact with any other patient. The only connection between this child and any of the others was the fact that the Christmas packages that were being collected at the Sunday school attended by patient 6, December 20, were subsequently delivered to the home of patient 10 in the Salvation Army headquarters. The child had not at any time consumed milk from dealer G. The case may be regarded as probably one of torticollis.

TABLE 1.—*Epidemiologic Data*

Case	Age	Sex*	School Attended	Paralyzed	Fatal	Date of Onset	Contact with Previous Case		Dealer G. M.lk
							Direct	Indirect	
A	9 mo.	♂	None.........	P	+	Oct. 7/8	0	0	0
B	11 yr.	♂	Sch. 1, gr. 5..	P	+	Oct. 7	0	0	0
C	5 yr.	♀	Sch. 2, kindergarten......	P	..	Oct 7	0	0	0
D	20 mo.	♂	None.........	P	+	Oct. 7	0	0	0
1	16 yr.	♂	None.........	P	..	Dec. 7	0	+	+
2	15 mo.	♂	Child downstairs, sch. 1	P	..	Dec. 14	0	0	G+
3	22 yr.	♂	None.........	P	+	Dec. 16	0	0	G+
4	2 yr.	♀	Bros. sch. 3..	P	..	Dec 16	0	0	G+
5	3 yr.	♀	None.........	P	..	Dec. 18	0	0	G+
6	11 yr.	♂	Sch. 2, gr. 5..	P	+	Dec. 18	0	0	G+
7	17 yr.	♂	Sis. sch. 1, gr. 5B...........	P	..	Dec. 19	0	0	G+
8	7 yr.	♂	Sch. 2, gr. 2B	P	..	Dec. 25	0	+	G+
9	19 yr.	♂	Bro. sch. 3 ?..	P	..	Dec. 25	0	+	G+?

* In this column, ♂ indicates male; ♀, female.

The chronology of this outbreak may be seen in table 1, which gives the salient epidemiologic features of the cases. The simultaneous occurrence of the four October cases in the city suggests a common source of infection, but we were unable to find anything in common. There was no evidence of direct or indirect contact. None of the patients had at any time used the milk supply in question, nor did they use the same milk supply.

The explosiveness of the December group again suggests a common source of infection. They all used the same milk supply. In no instance was there a history of direct contact with a previous case. There were, however, the following instances of indirect contact:

The dairy farmer concerned in the epidemic, his wife, and his daughter, aged 6 years, attended the funeral of patient A, who was a niece, October 10. The boy, patient 1, though working on the P. farm at the time, did not accompany them. The P. family spent several hours at the house in Virgil, taking one meal while there. They deny any illness even of a minor nature. There was no subsequent visiting between these two families. Patient 1 also attended the theater where the mother of patient C of the October group sold tickets.

The mother of patient 8 worked in the restaurant where patient 3 took his meals.

Patient 9 attended a morning motion picture show, December 19, six days before the onset of his illness. The mother of patient C sold tickets at this theater.

These are the only instances of possible indirect contact that could be found.

MILK

Patients 2, 4, 5, 7 and 9 were in families of regular customers of dealer G. Patient 7 also drank from a pint to a quart of dealer G. milk for lunch at an automobile factory. Patient 3, living in a rooming house, drank milk three times a day in a restaurant supplied with 35 quarts a day by dealer G. The family of patient 6 did not take milk of dealer G. but attended a party on the night of December 12, where patient 6 drank two glasses of milk which was obtained from dealer G. for the occasion. Dealer G. did not supply milk to the home of patient 8, but the mother worked in the restaurant referred to in connection with case 3. She handled the milk in the restaurant and frequently drank it. She made a practice of bringing food home from the restaurant for family consumption. She did not remember bringing raw milk home, but often brought such things as bread and rice puddings which had been prepared with dealer G. milk. She also took food which came back from the tables in the restaurant.

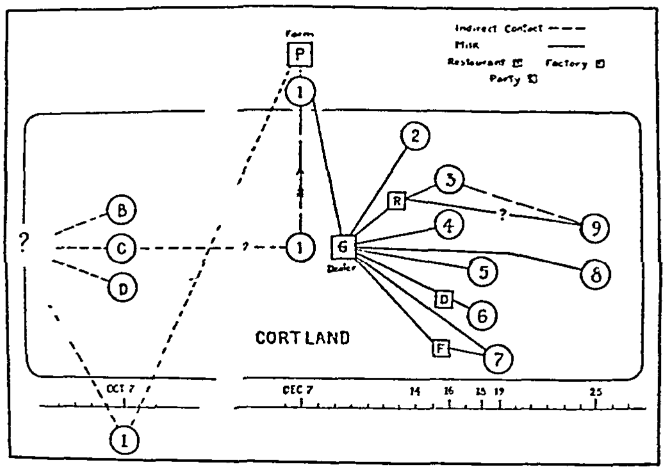

Fig. 1.—Epidemiologic relationship between the cases.

Figure 1 shows the epidemiologic relationship between the cases in this outbreak, as indicated by the information we were able to collect.

The total daily milk supply of Cortland is approximately 5,700 quarts, of which dealer G. sold an average of 245 quarts, or about 4 per cent of the total. His milk was not pasteurized. All of the milk from dairy P., about 215 quarts daily, was sold to dealer G. whose other regular source of supply was dairy W. Dealer G. purchased W.'s entire product, amounting to about 30 quarts daily, and occasionally pieced out his supply with small amounts obtained from other dealers. During the week of December 7 he purchased about 40 quarts on two occasions from dealer A., who sells from 400 to 500 quarts daily in the city and among whose customers no cases of poliomyelitis appeared.

Each morning dealer G. received his milk in 40-quart cans from the sources mentioned, consisting of milk of the same morning and of the previous night. Dairy W. furnished only from 30 to 40 quarts, but the night's and morning's milk were delivered to the dealer in separate cans. The milk from the different dairies was bottled at the same time, but the older milk (i. e., that of the previous night) was always bottled first, and after the bottling machine had been cleansed, the morning's milk was bottled.

At about 3 p. m., dealer G. began his first delivery, loading his wagon with the older milk and following the route shown in figure 2. Among the patrons on this route was restaurant W., which took 35 quarts. After making this delivery he returned to his plant, reloaded with morning's milk and what was left over from the first delivery, and made a second delivery, as shown in figure 2. On this delivery he made a point of loading his wagon so that the night's milk left over from the first delivery, amounting to less than 12 quarts, would be delivered first. The first house on this second delivery was that of patient 8. The morning's milk remaining, approximately 75 quarts, was delivered in pint bottles about 8 a. m., the following day to the workmen in an automobile factory for their lunches (compare case 7). It will thus be seen that the first delivery consisted entirely of night's milk while the factory delivery and the second delivery, with the exception of the first houses, was morning's milk.

Figure 2 also shows the relation of the dealer G. milk deliveries to the cases in this outbreak. As will be seen, all the cases appear on, or are traceable to, the first delivery, which consisted of night's milk, with the exception of patient 8, who, as has been explained, lived in the first house reached on the second delivery and would receive any night's milk left over from the first delivery.

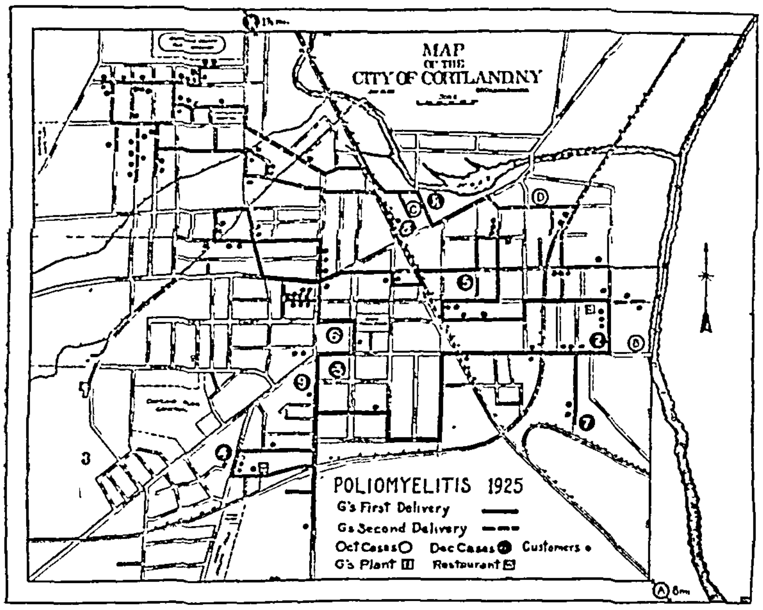

Fig. 2.—Map of city of Cortland.

It therefore appears that all of the cases, with the exception of case 6, are traceable (one indirectly) to the delivery of night's milk. This, it is believed, indicates that only the night's milk coming from the P. dairy farm happened to be contaminated by patient 1, perhaps on only one occasion. Since patient 6 only drank dealer G.'s milk on the night of December 12, some pains were taken to determine exactly what milk he drank. After a careful rehearsal of dealer G.'s handling of milk, it seems that in the ordinary course of events, this milk would have been of the morning of December 12. However, in view of the fact that this milk was called for at dealer G.'s plant, was in quart bottles, and was taken from the cooler, it was quite certainly left over from some previous delivery and possibly could have been some of the night's milk of December 10, the last night on which patient 1 handled dairy P. milk. If the milk was contaminated on the night of December 10 only, the incubation period of the first case of the suspected milk-borne group would be as short as three days, and of the last case, fourteen days.

GEOGRAPHIC DISTRIBUTION

With the exception of cases 3, 6 and 9, each of the December cases was fairly remote from the others of that series. Considered in conjunction with the October cases, two other instances of geographic association are found, cases B and 2, and cases C, 1 and 8. It should be remembered that patient 2 did not come to Cortland until December 2, whereas patient B died October 11; also that patient 1 spent only Saturday nights at the location indicated on the map.

With regard to each of these groups, it can be said with certainty that contact between the different members was not intimate, that their acquaintance with one another, if it existed at all, was of the slightest, and that so far as could be ascertained they had no intimates in common.

The fact that no cases occurred in the northwestern section of the city despite the large number of customers G. had there (fig. 2), we believe was due to the fact that most of these customers were on the second delivery. It was not due to a difference in age distribution or to a smaller per capita consumption of milk. The latter was about the same for the two deliveries. The age distribution of the customers is shown in table 2.

Table 2.—*Age of Customers*

Age	Total	First Delivery	Second Delivery
Under 5	48	25	23
From 5 to 9	44	23	21
10 to 14	41	22	19
15 to 19	40	26	14
20 and over	255	139	116
	428	235	193

The age distribution of the cases in this outbreak (cases 2-9, inclusive) shows an unusually large proportion of patients over 10 years old, one half as compared with an average of one third in New York State, 1920-1924.

The sex of the ninety-six persons under 20 years of age on G.'s first delivery was forty-three males, fifty females and three unstated, making no allowances for milk consumed at restaurant W. Of the eight presumably milk-borne cases (cases 2-9, inclusive) six of the patients were male, giving a proportion of 3 : 1 as compared with 1.31 : 1.0 for New York State, 1920-1924.

Another peculiarity was the poor living conditions of four of the families in which cases occurred, while with a fifth it was a mere matter of opinion whether it should be so classed or not. It was at first thought that this might be due to G.'s having this class of trade; but the census of his customers taken by the nurses listed only nine of ninety-eight families as living under poor conditions. It will have been noted that there was but one case in a family and that in only one family was there a suspicion of more than one case (case 7).

In thirty-seven milk-borne typhoid outbreaks in New York State for which sufficient data are available to make the computation, it is found that the average has been one case to about every 14 quarts of milk sold daily by the implicated dealer. The median is about half that figure. However, there are five instances in which the proportions were much lower, showing only one case to 38, 44, 45, 71 and 86 quarts daily, respectively. The figure for this outbreak is about one case to 30 quarts, counting case 9; one to 35 quarts if case 9 is excluded. However, if this computation is made on the first delivery only of dealer G.'s milk, the ratio would about equal the average noted above for typhoid.

The fact that one boy contracted the disease, though he drank only two glasses of the milk, is an occurrence that is not uncommon in typhoid outbreaks either from milk or from water, and is usually interpreted as a function of susceptibility. The fact that all of the other cases occurred in families receiving night's milk led to the suspicion that this outbreak was due to a single contamination of milk at the dairy farm, and to the inference that the milk used at the party attended by this patient was of that lot. We endeavored to determine just which milking this came from; but, in view of the fact that this milk was not delivered on the route, this could not be determined. From a careful survey of the handling of milk by dealer G., it appears that this milk could not have been earlier than the night of December 10, nor later than the morning of December 12.

SUMMARY

As to the Cortland outbreak, we would point out that the only cases to occur in a city of 15,000 people subsequent to the appearance of three cases more than two months previously were, with one possible exception, in persons who drank milk from one dealer who sold less than 4 per cent of the city's total supply; that the cases were distributed widely enough to make it improbable for the milk supply to be a mere coincidence of geographic distribution. When to these facts we add that an actual paralytic case of the disease existed on the dairy farm from which most of the milk came; that this patient was milking the cows and handling the milk for a period of four days while in the acute stage of the disease, and as the time which elapsed between this period and the dates of the onsets of the subsequent cases was consistent with the generally accepted minimum and maximum incubation periods of poliomyelitis, the chain of circumstances is as complete as is found in the majority of milk-borne outbreaks of other diseases. While this outbreak points to transmission through milk,[1] we are not of the opinion that this is the usual mode of spread of poliomyelitis.

NOTE.—Since this report was written, two additional cases in this outbreak have come to light, one a playmate of patient 8. This child lived in a connecting house and visited patient 8 when he was first taken sick. The other was an adult living in the seventh or eighth house supplied by dealer G, on his second delivery.

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[1] Dingman, J. C.: Report of a Possibly Milk Borne Epidemic of Infantile Paralysis, New York State J. Med. **16**: 589 (Dec.) 1916.

General Hospitals for Whole Community.—To use the general hospitals, either in themselves or with annexes, for the admission of all classes of the community would touch in many points the duties and interests of the profession, both those members of it already engaged in the treatment of the inmates of these institutions, and the unattached general practitioner. If the conditions attending the admission of paying patients into a general or private hospital be regarded as similar to those subsisting in the present private nursing homes—and doubtlessly they would be so—there can be no difficulty in the matter of professional attendance, for every doctor would treat his own patient, and the official staffs of the hospitals would in no way be called on except when sought for in consultation by the patient's own doctor; and it would be no little source of satisfaction and convenience both to the doctor and patient that an expert opinion on any matter could be readily obtained when desired. A further gain to the family doctor would exist in the perfect equipment of the institution, whereby he could either himself, or with the aid of an expert, obtain all those necessary laboratory examinations.—Maylard, A. E.: *Glasgow M. J.* (June) 1926.

HYPERREFLEXIA OF LOWER LIMBS AFTER EXERCISE *

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A distinction must be made between the effect produced by prolonged exercise and that occurring after moderate use of muscles during only a few minutes. Much attention has been paid to the results of muscular exhaustion, but little to the change in reflex activity resulting in rare cases from taking a few steps through a room, especially when intermittent lameness of vascular origin, either central or peripheral, is not under consideration.

Knapp and Thomas studied the reflexes in long distance runners, young men who ran over a course of twenty-four miles. They remark that the influence of fatigue on the reflexes has been disputed. Lombard found that moderate fatigue caused a decided diminution in the knee jerk, and he explained the discrepancy between his conclusions and Sternberg's by the fact that Sternberg's observations were made in cases of extreme fatigue. Other writers, they state, have in the main agreed with Sternberg's conclusions that the reflexes are exaggerated by fatigue, provided it is moderate; while excessive fatigue diminishes or abolishes the reflexes. Knapp and Thomas[1] found that the run in many of the twenty-six cases that they examined caused some diminution of the knee jerk. In only four cases was there an increase. In no case was there a clonus. The diminution was often decided. In three cases the reflex was absolutely lost. The ankle reflexes also showed a diminution. The loss of the ankle reflexes did not always coincide with the loss of the knee jerks. These studies were made on men greatly exhausted.

During the recent war I had the opportunity of studying the effect of forced marches on certain young men who had been taken from sedentary occupations and forced to carry heavy equipment on long hikes. The following case is an example of what probably was of rare occurrence:

H. P., a man, aged 29, in good health, volunteered for the army and entered the service in June, 1917. While at Camp Green, N. C., in October, he awoke one morning and found both lower limbs powerless. For some weeks previously these limbs had felt numb and weak after any long hike. He could not move his lower limbs below the hips for about ten days following the sudden onset of paralysis; then his right lower limb began to recover motor power, and at the end of two weeks this limb seemed to be about normal. Sensation at first was impaired for touch and pain below the knees. He had no incontinence of bladder or bowels. In about three weeks from the onset of the paralysis he was able to walk with a cane, and two or three weeks after this was discharged from the hospital, and returned to duty. He must have been in good condition, but he stated that after long hikes he continued to get a numb feeling in the left lower limb.

He was sent to France early in the spring of 1918, and returned to this country in July, 1919. While in France he spent seven months in the front lines. He was in six battles and went over the top repeatedly. He complained of some discomfort in his left lower limb during his entire stay in France. He was discharged from the army without disability in July, 1919.

The interesting features in this case are that the man had had no symptoms in the lower limbs until he began to take long hikes, from 8 to 12 miles a day, without previous training, and had carried an equipment which was said to weigh between 50 and 60 pounds. Before entering the army he had been a butcher. It seemed to me that he probably had some predisposition to functional disorder in the lower limbs, and that the severe exercise of these limbs caused vascular disturbance and produced an intermittent claudication of the spinal cord.

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* Read before the Philadelphia Neurological Society, May 28, 1926.

[1] Knapp and Thomas: The Reflexes in Long Distance Runners: A Study of the Influence of Fatigue on Certain Reflexes, J. Nerv. & Ment. Dis. **31**: 94 (Feb.) 1904.

When he was examined by me, May 16, 1921, his patellar reflexes were markedly exaggerated, he had bilateral patellar clonus, persistent ankle clonus on the left side, and probably bilateral Babinski sign. His sensations of vibration, position, pain and touch were normal everywhere, his left lower limb was slightly weaker than the right, and the right was normal in motor power. Lumbar puncture and roentgen-ray examination of the spine revealed nothing abnormal.

It seemed evident that organic change had occurred in the spinal cord probably in relation to excessive exercise.

My attention has been arrested recently by increased reflex activity after slight exercise of muscles when there could be no possibility of exhaustion. This phenomenon is of very rare occurrence and would seem to indicate that some abnormal condition of the central motor tracts must exist when it is observed. It seems to me that it may be an early sign of degeneration of the pyramidal tracts. The case in which I made the observation of hyperreflexia after slight exercise is as follows:

A man, aged 51, referred to me by Dr. S. S. Landis of Harrisburg, Pa., Jan. 6, 1926, complained of pain in the right hip. Fifteen years previously he was struck in this hip by a piece of steel rail. He was not at all disabled by this accident and had no pain from it at the time. Two years later he first experienced a shooting pain at the right sacro-iliac articulation; at first it was felt only two or three times a year, but it had increased recently until it occurred every three or four weeks and lasted about a week. It is now a steady pain with exacerbations, and radiates down the back of the right lower limb to the inner side of the sole of the foot. For a number of years the man was obliged to lean forward during the attacks while walking, because it was painful for him to straighten up. A roentgenogram of the lumbar spine by Dr. Pancoast was negative. I regarded the condition as sciatica, and Dr. Moxey diagnosed probably subsiding sacro-iliac weakness. This pain probably has little or no relation to the results of his further examination. It is important, however, that he had observed that his lower limbs tired easily, but he had no definite paralysis in these limbs.

I saw him first in my office. He had walked several squares, and the tendon reflexes of the lower limbs were greatly exaggerated. I sent him to the University Hospital, where he was put to bed and a careful examination was made by my intern, Dr. Miller. On reading the notes the next morning, I found the statement that the biceps and triceps reflexes were normal; that the patellar reflex was exaggerated on the right side but normal on the left; that the Achilles reflexes were both normal; that there was no ankle clonus and no patellar clonus, and that the Babinski reflex was with flexion. These findings in the reflexes were so dissimilar to what I had obtained in my examination the day before that I felt some mistake must have been made. I found, however, that a little exercise of the lower limbs caused a great increase in the reflex activity of these limbs. Mornings, after a night's rest, the patellar reflexes were about normal, and moderate ankle clonus could be obtained on the right side but not on the left. The Achilles reflex on the left side was a trifle exaggerated. The Babinski reflex was always with flexion even after walking.

Bilateral ankle clonus became very pronounced after the man had walked up and down the room two or three times, especially after he had climbed stairs, and the patellar reflexes also were greatly increased. The lower limbs were not spastic and in no way paretic.

The blood Wassermann reaction was negative. The lumbar puncture gave negative findings. The Wassermann and colloidal gold tests of the spinal fluid were negative.

I regarded the case as one of possible incipient spastic paralysis, and the absence of signs of organic disease of the central nervous system is in contrast to a somewhat similar case as regards the reflexes reported by Rouquier and Couretas.[2]

These observers reported before the Neurologic Society of Paris, Dec. 3, 1925, a case of cervical syringomyelia in which inconstant signs of pyramidal tract irritation were produced in the lower limbs by fatigue. They spoke of chronic disease of the central nervous system, with slow development in which signs of pyramidal tract disease were absent in repose but appeared after muscular exertion. Their patient had syringomyelia of the scapulohumeral type. When he was lying down the patellar reflexes were lively, the Achilles reflexes were normal, and there was neither patellar nor ankle clonus. Exercise of the lower limbs, as going upstairs, altered the clinical picture immediately. Ankle clonus became persistent on the left side and less pronounced on the right. Patellar clonus was persistent on the left side and abortive on the right. The Babinski reflex had been in flexion before the muscular effort, but after muscular effort became typically in extension on the left side. It was inconstant on the right. These signs of pyramidal tract irritation disappeared after a few hours' rest. The gait was normal.

Rouquier and Couretas say in a very general way that similar observations have doubtless been made by neurologists in other disease than syringomyelia, but they do not give reference to a single case.

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PREPARATION OF A POTENT VASODILATIN-FREE PANCREATIC SECRETIN *

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In a preliminary note, Luckhardt, Barlow and Weaver[1] described a simple and at the same time efficient method of preparing a highly active solution of duodenopancreatic secretin by placing in an excised duodenojejunal loop of intestine, after the intestinal contents have been washed out, from 0.2 to 0.4 per cent of hydrochloric acid, and allowing the latter to remain in the intestine from ten to thirty minutes. The acid thus removed is usually clear or straw colored, contains no heat coagulable proteins, and can be injected intravenously. Under one well known condition, to be mentioned presently, such solutions of secretin may cause only a slight fleeting vasodilatin action, coupled with a marked secretory response of the pancreas.

These facts suggested that such a solution of secretin, because of its sometimes negligible action on blood pressure and absence of physiologically inert or perhaps deleterious products elaborated by the usual process of preparation of secretin, might form the starting point of an investigation designed not only to rid the solution of the last vestiges of vasodilatins but also to prepare the pure product (pancreatic secretin).

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[2] Rouquier and Couretas: Signes inconstants d'irritation pyramidale, provoquées par la fatigue, au niveau des membres inférieurs, chez un sujet atteint de syringomyelie cervicale; atrophie musculaire, à debut scapulo-huméral; hyperréflectivité avec inversion des réflexes stylo-radial et du biceps, Rev. neurol. **2**:769 (Dec.) 1925.

* From the Hull Laboratories of Physiology and Physiological Chemistry, University of Chicago.

[1] Luckhardt, A. B.; Barlow, O. W., and Weaver, M. M.: Am. J. Physiol. **76**:182, 1926.

LITERATURE

The authors mentioned were led to the development of this simple method (on the intestines of dogs used in the laboratory for other purposes) as a result of a previous observation of Grogan and Luckhardt,[2] previously made by Matsuo,[3] and again later and independently by Ivy,[4] that the acid washings of the upper portion of the small intestine collected from a living dog possess marked secretagogue action on the pancreas when intravenously injected. This secretagogue action is often accompanied by very little vasodilatation. On the other hand, if one introduces 0.4 per cent hydrochloric acid repeatedly into the intestine of a living animal, the intestine exposed to the acid becomes in time cyanotic and then hemorrhagic. The mucous membrane furthermore loses its distinctive firm appearance and consistency and is reduced to a slimy gelatinous membrane, which can be removed from the underlying muscular coat with the greatest ease. At any rate, whether living or dead, a quick and simple extraction of the mucous membrane at room temperature favors the preparation of a very active secretin solution, and the method involves no severe treatment or maceration of the mucosa. The extract, furthermore, may contain an almost negligible amount of vasodilatin, a fact of great importance in any discussion on the mechanism of action of so-called pancreatic secretin solutions (Bayliss and Starling).

Popielski,[5] in a great number of papers, questioned the physiologic significance of the discovery of Bayliss and Starling that acid extracts of the duodenal upper intestinal mucosa possessed secretagogue properties (pancreatic secretin). He emphasized the fact that such extracts possess more or less powerful vasodilation, as evidenced by a great fall in blood pressure. The latter effect he considered the direct cause of the secretion. Luckhardt, Henn and Palmer[6] also questioned the physiologic significance of Bayliss and Starling's findings by reporting that pancreatic secretin could be prepared from the mucous membrane of either the stomach or the intestine, and that gastrin, whatever its source, stimulated the stomach and pancreas to activity. Popielski's position, however, was rendered quite untenable as the result of the investigations of Carlson, Lebensohn and Pearlman,[7] Luckhardt and Blonder,[8] and Parsons.[9] Carlson and his associates showed that secretagogue action of a pancreatic secretin solution is destroyed by a brief period of digestion with pepsin-hydrochloric acid or gastric juice. Luckhardt and Blonder confirmed this result and showed, furthermore, that either mild alkaline treatment or tryptic digestion seriously interfered with the secretagogue effect of such solutions without having the slightest effect on its vasodilating properties. Eloise Parsons,[9] in chemically analyzing secretin preparations for histamine content, not only proved that histamine is not the vasodilator constituent of the Bayliss and Starling crude secretin but that, although the treatment involved in the chemical analysis destroys the secretin action of the preparation, it has little or no effect on its depressor constituent. In other words, vasodilatation is as pronounced after treatment with the various agents mentioned as it was before, and still secretion no longer follows such a generalized vasodilatation.

Other evidence was adduced by Luckhardt and Blonder[8] pointing to the possibility that a given pancreatic secretin solution contained two distinct substances whose physiologic action were simultaneously expressed when injected. Among other reasons, there is no direct relation in a given animal between the extent of the vasodilatin and the secretory response. Luckhardt, Weaver and Barlow[10] tested out the pancreatic secretory activity in a given animal of the most powerful vasodilatin known, acetyl choline.[11] In only the most sensitive preparations did this substance in any dose produce more than a few drops of pancreatic juice, whereas a pancreatic secretin solution effecting even a less decided fall in blood pressure caused a copious secretion which, unlike the secretion from acetyl choline, could not be abolished by the injection of a suitable dose of atropine.

GENERAL METHODS

METHOD OF PREPARING DOGS FOR INJECTION

Rather large dogs were used (from 15 to 25 Kg.). These were starved from one to three days. They were then placed under light barbital anesthesia, barbital sodium being used in doses of from 225 to 250 mg. per kilogram, injected intravenously. Within fifteen to twenty minutes the animal was usually anesthetized.

The carotid artery was cannulated in the usual way for a blood pressure record. The saphenous vein was prepared for the purpose of intravenous injection. The duct of Santorini was then cannulated, no attempt being made to cannulate or ligate the duct of Wirsung. The end of the cannula in the pancreatic duct was brought outside the body and the abdominal wall sutured around it. At this point the dog was ready for injections.

METHOD OF PREPARING "NEW SECRETIN"

We are accustomed to call secretin preparations made in the following manner "new secretin," in contradistinction to "old secretin" as prepared by the method of Bayliss and Starling.

In a previous communication,[1] the essentials of this process were reported. In the routine preparation we have been accustomed to proceed as follows:

The intestine is removed from the dog or dogs as soon after death as possible—in some cases even before the animal's heart has stopped beating. The first 100 to 150 cm. of intestine is then excised, the pylorus of the stomach being included when practicable, and this length of intestine is washed by the passage through it of a fairly rapid stream of cold tap water. This serves to remove débris, worms, etc., which are commonly found even in the upper bowel. If this process is accomplished immediately after the death of the animal, there is practically no evidence of desquamated epithelial cells in the washings.

A hemostat is then placed at one end of the strip of intestine and 100 cc. of 0.4 per cent hydrochloric acid introduced through the other end and the end closed by a second hemostat. Four-tenths per cent acid is used as a routine because it seemed to give a more powerful preparation than extraction with 0.2 per cent acid.

After the acid has been enclosed in the intestine, the latter is simply allowed to lie on the top of a laboratory table for thirty minutes. This length of time is purely arbitrary, and we have found that ten minutes may serve as well in many cases. After the loop has stood for thirty minutes, one hemostat is removed and the acid allowed to filter through cotton or filter paper into a flask. The intestine is not stripped to get out the last drop of solution, because such a procedure massages out cellular débris, which tends to render the filtrate turbid.

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[2] Grogan, R., and Luckhardt, A. B.: Am. J. Physiol. **68**: 142, 1924.

[3] Matsuo, I.: J. Physiol. **45**: 447, 1912-1913.

[4] Ivy, A. C.: Personal communication to the authors.

[5] Popielski, L.: Ztschr. f. Physiol. **19**: 801, 1906; Arch. f. d. ges. Physiol. (Pflüger's) **121**: 239, and subsequently.

[6] Luckhardt, A. B.; Henn, S. C., and Palmer, W. L.: Am. J. Physiol. **59**: 457, 1922.

[7] Carlson, A. J.; Lebensohn, J. E., and Pearlman, S. J.: Has Secretin a Therapeutic Value? J. A. M. A. **66**: 178 (Jan. 15) 1916.

[8] Luckhardt, A. B., and Blonder, E.: Am. J. Physiol. **68**: 142, 1924.

[9] Parsons, Eloise; and Koch, F. C.: Proc. Am. Soc. Biol. Chemists **18**: 38, 1923. Parsons, Eloise: Am. J. Physiol. **71**: 479 (Feb.) 1925.

[10] Luckhardt, A. B.; Weaver, M. M., and Barlow, O. W.: Unpublished data, 1926.

[11] Hunt, R.: Am. J. Physiol. **45**: 197, 1917.

As prepared in this manner, there is very commonly a tinge of bile in the solution. On the other hand, the solution may be practically water clear.

METHOD OF PREPARING "OLD SECRETIN"

We have followed in general the method of Bayliss and Starling,[12] namely, that of scraping off the mucosa and weighing. At this point our procedure varies somewhat from the original in that we do not grind up the mucosa, although we chop it up to a greater or less extent with scissors. We believe this procedure to be a distinct advantage over the old because, while the mucosa may not be so thoroughly extracted, nor is so much of the secretin content obtained, nevertheless the final preparation contains far less protein, mucus and other extraneous material when boiled later for four minutes with 0.4 per cent hydrochloric acid.

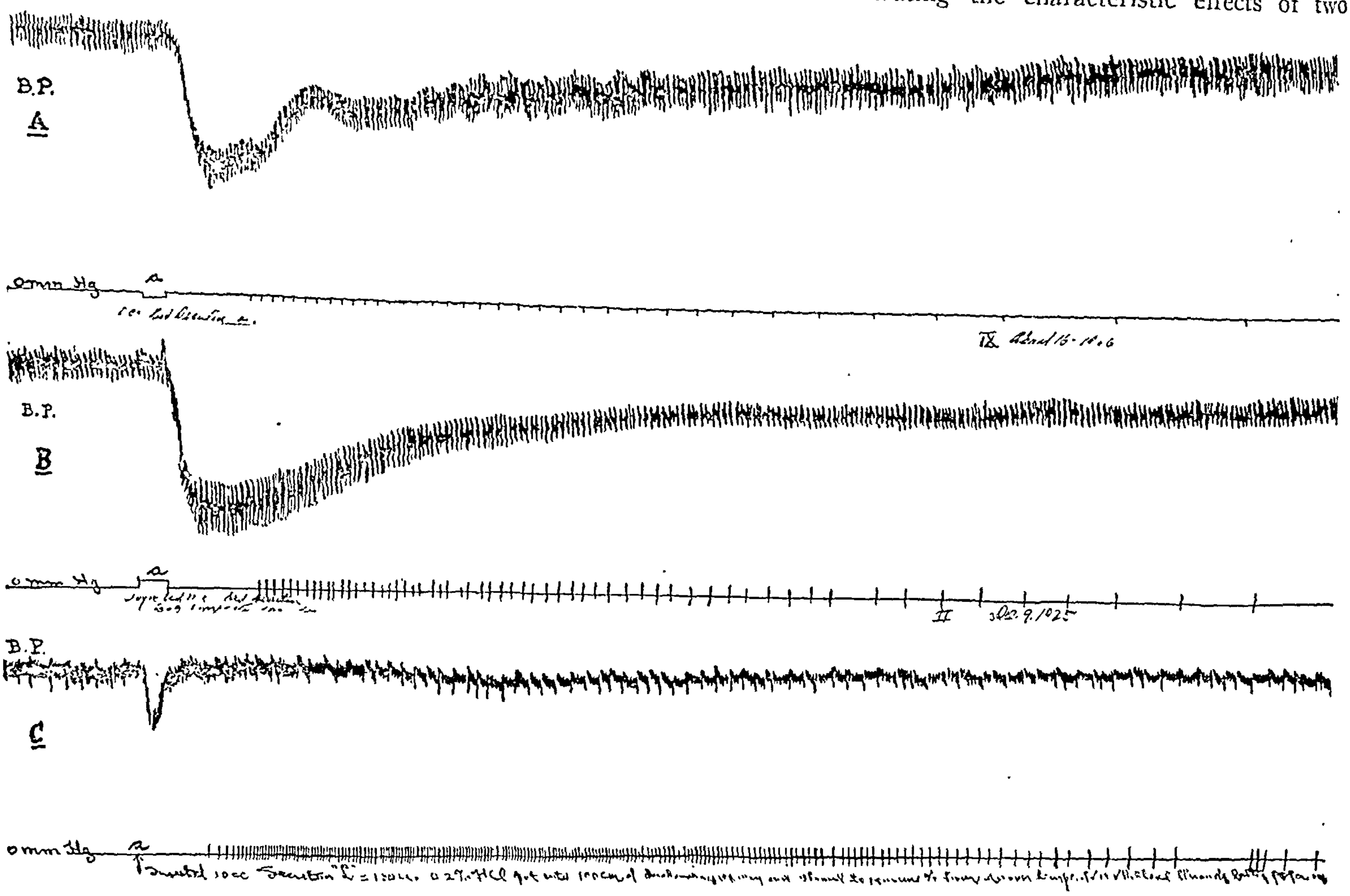

Fig 1.—Blood pressure tracings, showing pancreatic response in drops of secretion recorded by a signal magnet on base line. Base line at 0 mm. of mercury pressure. Intravenous injection of secretin preparations at *a*. *A*, maximum vasodilatin effect of a secretin preparation injected at *a*, made by extracting with 0.4 per cent hydrochloric acid *in mortuo*, as described in the text. *B*, typical vasodilatin and secretory response following the injection at *a* of secretin preparation made by the method of Bayliss and Starling. *C*, slight and fleeting vasodilatin effect followed by copious secretion of pancreatic juice after the injection at *a* of a secretin preparation made by extraction in mortuo, as described in the text. This tracing is an example of the most powerful secretory response with the minimum of vasomotor effect which this method of extraction yields.

After boiling, we filtered through cotton or filter paper, without neutralization. A preparation made as described compares favorably in secretagogue activity with one in which the mucous membrane is ground and thoroughly rubbed up with sand before boiling with 0.4 per cent hydrochloric acid. From 4 to 5 cc. of 0.4 per cent hydrochloric acid was used for each gram of mucosa.

In general we have adopted a dosage of 5 cc. of both "new secretin" and "old secretin" for a single injection into the animal, but in some of the largest dogs (over 20 Kg.) we have increased this dosage to between 7 and 10 cc.

METHOD OF PRESERVING SECRETIN PREPARATIONS

In our early experiments we made an attempt to preserve solutions by adding a layer of toluene, keeping in dark bottles and conserving in the ice chest. Such attempts met with only partial success. If the preparations are to be tested out within a day or so it is probably best to leave them as they are, certainly without toluene, for this substance is not an efficient preservative, and unless it is boiled off prior to injection of the secretin solution, can certainly do no particular good. Some of the preparations were boiled, and this procedure seemed to prolong their activity, although it did seem at times to increase the vasodilatin effect of the "new secretin" preparations.

RESULTS

As we offered no figures or tables in our preliminary publication,[1] we reproduce at this time three graphic records illustrating the characteristic effects of two preparations of "new secretin" and, for comparison, one prepared in the usual way by the method of Bayliss and Starling ("old secretin").

Figure 1 *A* represents the poorest type of preparation of "new secretin," as evidenced by a moderately severe drop in blood pressure of a protracted character. In Figure 1 *B*, we illustrate the usual hemodynamic effect and secretory response following the intravenous injection of "old secretin" (Bayliss and Starling). Figure 1 *C*, on the other hand, represents the best response obtained when the preparation is made by the simple method described above. The slight hemodynamic effect is so fleeting and the secretagogue action is so profound that it would be academic quibbling, even without the other evidence presented earlier in this paper, to propose that this response was due to the

initial and evanescent depression in blood pressure. We call attention to the fact that the injections were made with the blood pressure at a high level.[8]

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[12] Bayliss and Starling: J. Physiol. **28-29**: 325, 1902.

It was this or a similar type of preparation which seemed to us highly favorable for further purification for the isolation of an entirely vasodilatin free solution. Many of the methods designed to effect this separation were entirely negative and will merely be mentioned.

For example, in an attempt to effect a separation by dialysis of "new secretin" solution through collodion tubes of different thicknesses, it was found that the vasodilatins passed through with the secretin. Ultrafiltration was equally unsuccessful. Vacuum dialysis by means of fish skin condoms, as described by Hanke,[13] led to destruction or disappearance of both substances. The observations by Parsons [14] suggested the possibility of adsorption of secretin on a solid phase in that she demonstrated the adsorption of secretin on infusorial earth and later released it by hydrochloric acid treatment. Our selective adsorption on fullers' earth and particularly on permutit also yielded some suggestive results. In this attempt we shook from 1 to 2 Gm. of permutit with 0.4 per cent hydrochloric acid until the suspension remained definitely acid to litmus. The permutit was then collected on filter paper and subsequently resuspended in from 10 to 15 cc. of "new secretin." After shaking at room temperature for ten or fifteen minutes, this suspension was filtered. The filtrate proved physiologically inactive. The permutit with the adsorbed vasodilatin and secretin was next treated with a 5 to 10 per cent sodium chloride solution. This filtrate, when injected, gave on one occasion the suggestive result given in fig. 2.

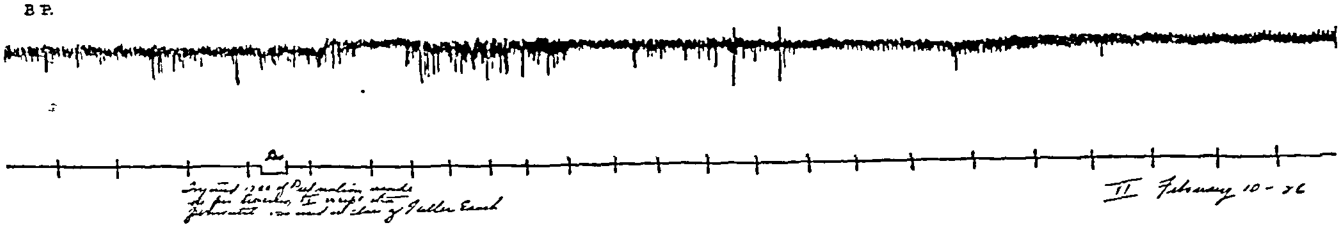

Fig. 2.—Blood pressure tracing and secretory response of the pancreas as described in figure 1. Tracing shows pancreatic response before and after the injection at *a* of 12 cc. of a secretin preparation made by extraction in mortuo. The vasodilatin has been removed by treatment with permutit, as described in the text. The results express a temporary doubling of the secretion rate without vasodilatin effect and suggest the possibility under proper conditions of separation by this method.

As will be seen, the secretion rate is doubled in the absence of any vasodilatin effect. The precise conditions under which such a separation can be effected are unknown to us. We have been unable to duplicate these results, though on a few occasions we have seen a slight increase in the spontaneous secretion rate without a detectable effect of such a preparation on the general blood pressure.

Although the precipitation of secretin by mercuric chloride has been unsuccessfully applied by others, we thought it worth while to attempt it again, in the hope that by following the process used by Abel [15] in extracting the mercury sulphide precipitate obtained in the pituitary hormone studies, by saturated sodium chloride, we might recover some part of the completely lost secretin activity. The results were, however, again negative. In fact, the saturated sodium chloride extract, when injected intravenously, caused a slight rise in blood pressure, as was to be expected. These negative results and this rise in blood pressure suggested that certain control experiments should be conducted on a known secretin solution in order to determine whether the relatively mild chemical treatment by hydrogen sulphide, carbon dioxide or sodium chloride saturation would destroy secretin or inhibit its action. In short, every treatment involved in the mercuric chloride precipitation and the subsequent decomposition of the precipitate was applied with the exception of adding the mercuric chloride. These studies showed no destructive effect by hydrogen sulphide or carbon dioxide treatment. On saturating a solution of "new secretin" with sodium chloride, however, a precipitate was obtained which, when properly washed, was found to be a very active secretagogue and entirely free from vasodilatin in the doses employed.

METHOD OF PRECIPITATING AND RESOLUTION OF A RELATIVELY PURE PANCREATIC SECRETIN

The process consists essentially in saturating, or nearly saturating, a crude "new secretin" solution with crystalline sodium chloride. One calculates approximately the amount of sodium chloride necessary to saturate the given quantity of solution, and then adds a somewhat smaller quantity of crystalline sodium chloride.

While there is evidence that concentrations of substantially less than half saturation with sodium chloride are sufficient to precipitate the secretin, it has been found advisable to use the higher concentration, as the precipitate is more flocculent and may be filtered more readily. The precipitate so formed floats on the surface of the solution and can readily be decanted or filtered.

At this point it is necessary to free the precipitate of all traces of the original filtrate which contains the vasodilatin fraction. This is necessary because the vasodilatin acts, apparently, in minute amounts, and if the precipitate is not carefully washed there is carried over an appreciable quantity of vasodilatin in further extractions. It has been found advisable, therefore, to wash the precipitate several times with 0.4 per cent hydrochloric acid saturated with sodium chloride. In the case of secretin precipitate made from "new secretin" solutions, this method of washing seems to be sufficient to free the precipitate from vasodilatins, at least so far as is grossly detectable by intravenous injection into a dog.

When the preparation used as a starting point has been made by the method of Bayliss and Starling ("old secretin"), such treatment does not suffice. In such cases various difficulties are encountered. The precipitate does not collect so readily. When, by means of vigorous centrifugalizing the precipitate is collected, it is a sticky mass, containing appreciable quantities of fat. Accordingly, it has been found necessary to dry the precipitate at this point and carefully extract it with ether. The precipitate is then redissolved in 0.4 per cent hydrochloric acid and reprecipitated with sodium chloride, and this process is repeated several times. By this method it has been found possible to get rid of most of the vasodilatins from secretin prepared after the method of Bayliss and Starling. But even then it may not be possible to free the preparation of the vasodilatin.

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[13] Hanke, M. I., and Koessler, K. K.: J. Biol. Chem. 66: 495, 1925.
[14] Footnote 9, second reference.
[15] Abel, J. J.; Rouiller, C. A., and Geiling, E. M. K.: J. Pharmacol. & Exper. Therap. 22: 289 (Nov.) 1923.

The sodium chloride precipitate (pancreatic secretin), washed free from the last vestiges of the filtrate containing the vasodilatin, can now be dissolved in a suitable amount of distilled water. It forms a perfectly clear to slightly turbid solution, entirely devoid of vasodilatin effects, as will be seen from an examination of figure 3. This tracing shows the secretory and hemodynamic effects of two preparations of "new secretin" before (*A* and *C*) and after (*B* and *D*) the separation of the secretin from the vasodilatin tested out on the same dog at a time interval of fifteen minutes between successive injections.

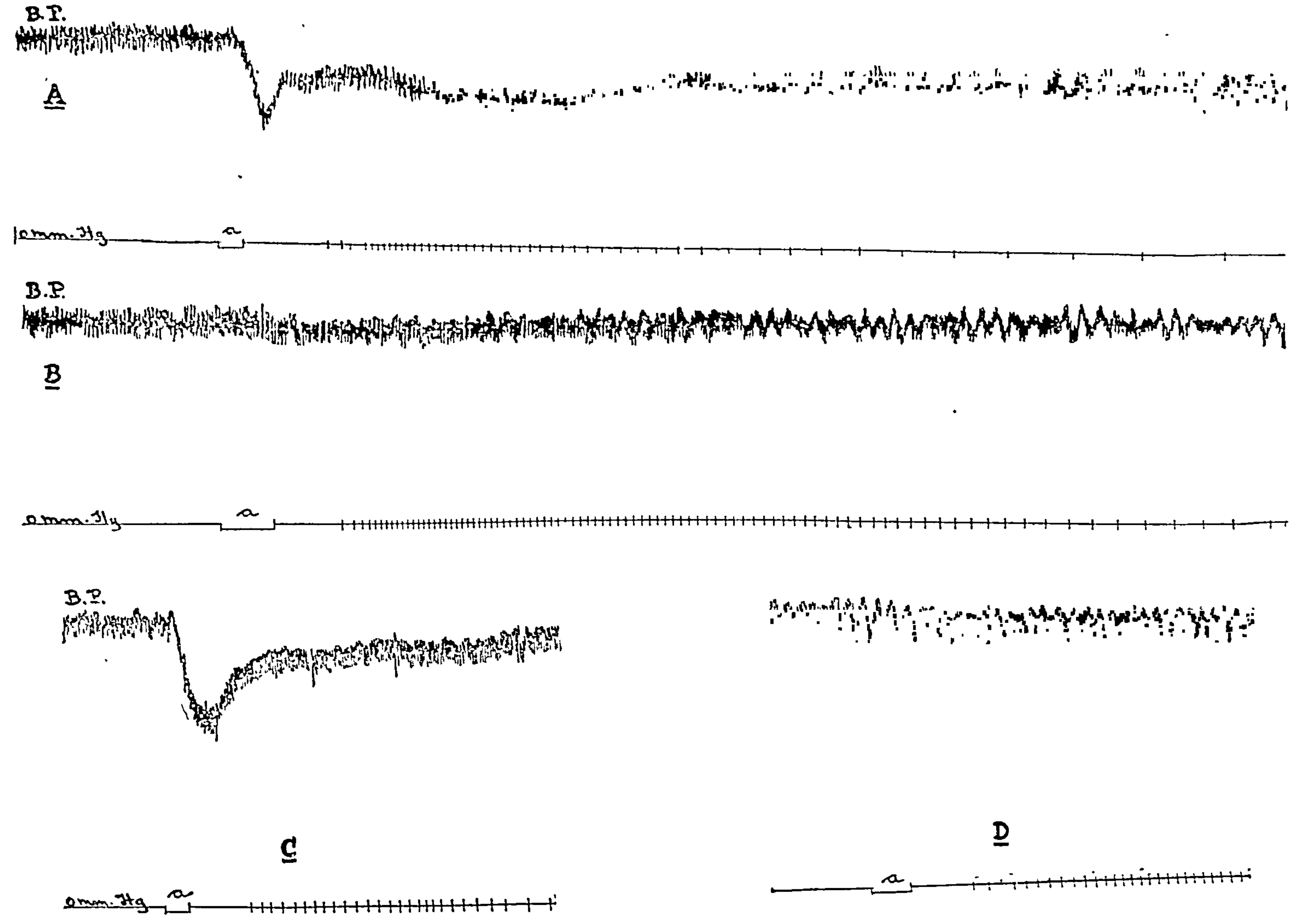

Fig. 3.—Secretory and hemodynamic effects following the intravenous injection of "new secretin" solution before (*A* and *C*) and after (*B* and *D*) the separation of the secretin from the vasodilatin by a method described in the text.

In *B*, twice the secretory dose was injected in order to test out the efficacy of the separation. Whereas the secretory response is doubled to a drop, there is no apparent vasodilatation. The profound respiratory depression was likewise greatly diminished, to say the least.

A "new secretin" preparation which was not powerfully active was treated in the usual way with sodium chloride. The precipitate was dried on a glass plate over a radiator. The dried powdered material failed to go into solution, and still the filtrate, clear as distilled water, possessed a most powerful secretory effect without having the slightest effect on the general blood pressure. This experiment, if it can be repeated, would seem to indicate that most of the precipitate consists of physiologically inert material. It further indicates that, in the process of drying, the proteins were rendered more or less insoluble but still permitted some of the active secretagogue to be washed from them.

Quite recently, Volborth[16] maintained that a vasodilatin free secretin preparation can be prepared by acidifying the sediment in succus entericus collected from a Thiry fistula.

Stepp[17] outlined a method which, applied to our so-called new secretin solution, promises a vasodilatin-free preparation.

COMMENT

The most promising result from this endeavor to separate the active hormone from the vasodilatin and the final isolation of pancreatic secretin in its pure form lies in the precipitation of the principle (with protein) by means of sodium chloride. Resolution of this precipitate after washing it with acidulated water yields a clear solution with marked secretory activity and possessing no dilatin action. It is a significant fact that in the precipitation designed to separate the vasodilatin from the secretin, so-called new secretin offers by far a better preparation than does old secretin. If old secretin is used, the precipitate always contains a greater amount of vasodilatin, which cannot be got rid of even by repeated reprecipitation and washing. Either the boiling of "old secretin" introduces another dilatin or in some way modifies the nature of the old secretin preparation so that an easy separation is no longer possible. It must be remembered, furthermore, that under most conditions of preparation of secretin by our technic there is less vasodilatin in the preparation necessary for removal. In this connection we also take occasion to point out that those preparations of new secretin contain the least amount of vasodilatin which are prepared at the earliest possible moment after the somatic death of the animal. If the intestines are allowed to stand about before the preparations are made, the acid contents are less clear, there is plainly a turbidity due to postmortem desquamation of the intestinal mucosa, and the vasodilatin content is increased. The ideal preparation for purification would be such as is obtained from an animal in vivo. Since this is not always practicable, the material had best be worked up immediately after death.

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[16] Volborth, G. W.: Am. J. Physiol. 72: 331 (Oct.) 1925.
[17] Stepp, W.: J. Physiol. 43: 441, 1912.

At any rate, this new and important step in the purification of the principle opens up many problems which at present are of physiologic (and theoretical) interest only (pharmacology of this highly purified substance, the possible separation of gastrin by the same method, the question of identity of the pure secretin and gastrin, the effect of forced subcutaneous and intravenous injections on intestinal digestion and the islet tissue of the pancreas, etc.). These and others will receive due consideration in subsequent investigations. At present we are satisfied to report the preparation of a vasodilatin-free pancreatic secretin solution. We feel that this contribution, together with those preceding it, definitely settles the question of the independence of the secretion on the vasodilatin (Popielski). In fact, we have some evidence that rather than cause or even favor the secretion, the vasodilatin action of the usual secretin solution is indeed a hindrance to it.

CONCLUSIONS

1. An easy method of preparing a highly active pancreatic secretin solution ("new secretin") has been developed.

2. Under proper conditions of preparation, such a solution may contain only a minute amount of vasodilatin.

3. The pancreatic secretin from this new secretin solution can be precipitated (with extraneous material) by means of sodium chloride, the vasodilatin fraction remaining essentially in the filtrate.

4. Resolution in water and reprecipitation with sodium chloride lead to a further purification. Under certain conditions the active hormone can be washed from the precipitate, with the result that the hormone is free from vasodilatins.

5. "Old secretin," prepared by the method of Bayliss and Starling, is not so susceptible to separation of the vasodilatin from the secretin by sodium chloride.

6. The preparations of "new secretin" which yield the smallest amount of vasodilatin are those which are made in vivo. Those made in mortuo are best prepared immediately on death of the animal.

7. A second method of selective adsorption to acidified permutit is uncertain and incomparably inferior in our hands with the precipitation by means of sodium chloride.

8. "New secretin" preparations made in vivo or in mortuo remain active for months (even without a preservative), particularly if they are boiled (to destroy most bacteria and enzymes).

9. The sodium chloride precipitate offers an excellent starting point for the ultimate isolation of the active principle in pure form.

THE SANITARY OFFICER AND COUNTY HEALTH WORK[*]

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Public health work, whether dealing with environmental sanitation or personal hygiene, is essentially concerned with personal service and must therefore find the solution of its problems in personal and community relationships.

Rural health work has two basic differences from urban health work. Personal relationships in rural health work are more intimate, the health worker being subjected to much closer scrutiny than is the case with urban workers. The second difference is concerned with finance. In the first place, the assessed valuation of rural areas is lower than is the case with cities, and, in addition, appropriating bodies of rural governments have not yet begun the appropriation of very large sums per capita for the protection and promotion of the public health. In a study of eighty-eight full-time county health organizations in operation throughout 1925, and serving nearly four million people, it has been shown that the total budgets represented a per capita tax of 32.4 cents.[1] It is not known what proportion of this theoretical per capita tax is borne from direct county appropriations, but it is fair to assume that expenditures from county funds do not exceed three fourths of the total budgets. On this basis, it would seem that in five Southern states, county governments were able or willing at the present time to spend not in excess of 25 cents per capita for public health purposes, and it is entirely probable that this is too generous an estimate.

In the selection of counties for full-time county health departments, we have usually thought of 50 cents per capita as being a suitable expenditure; a budget of $10,000 per annum as the desirable budget for a unit of four persons, and a county of approximately 20,000 persons as a suitable unit for operations. While, certainly, we do not need to fix our objective on a lower plane at present, it would seem that we have yet much to do in developing a willingness to pay for the services of county health departments in the counties with populations of 20,000 or more, since at present that willingness to pay does not go further than half way toward our objective.

If adequate protection of the public health is essentially concerned with personal relationships, obviously some form of full-time health service must be provided for each political unit of government, as the unit of health organization, though this need not mean that all the personnel of a unit of health organization must confine its activity to an individual political unit of government. Faced with the necessity for providing this service, and at the same time confronted with the difficulties of financing rural health work, what, then, is the solution for the rural Southern county of less than 20,000?

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[*] Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

[*] Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Table prepared by International Health Board, in a study of five Southern states.

Since the county health unit is, in itself, composed of certain elements that deal with different parts of the county health program, it would seem that the judgment of those who have begun the development of a full-time local health organization, with one or more of the elements of the county health department, have shown sound judgment, provided they consider this form of organization to be a step in the development of more adequate local organization, whether that development extends over a period of a few years or over a generation. In some areas, considerable advance has been made by use of the public health nurse in the development of a local program, the principal parts of which are concerned with that phase of preventive medicine commonly termed personal hygiene. In some other areas, it has seemed proper to begin with the environmental sanitation phase of the local health program, with the sanitary officer considered as the logical agent. The latter plan has several advantages, adapting it for use in many Southern counties. In the first place, it deals with some of the fundamentals of rural health work, since the sanitary officer may devote most of his activity to the prevention of soil pollution, protection of water supplies, and certain parts of a malaria control program.

A convincing demonstration of the value of full-time local health work should be possible, as a result of his activity in community "house-cleaning," which, in time, would increase the willingness of the local government to pay for a more adequate organization. It is also probable that the sanitary officer may more rapidly stimulate this willingness to pay for health service, and insure the permanence of his own work to a greater degree than would be possible for the public health nurse, for the activity in which he would engage is less apt to encroach on other fields of service, and therefore less likely to result in misunderstanding. His field of service need not, however, be entirely confined to the foregoing activities, for such an officer, if properly trained, can stimulate the control of communicable diseases by securing more intelligent and more thorough application of the measures of quarantine and isolation, and by doing the promotion and organization work for prophylaxis against the diseases for which specific preventive measures are available. He can secure closer cooperation between the local physicians and the state department of health by stimulating use of the state laboratories; by stimulation of more thorough registration of births and deaths, and the betterment of morbidity reporting; and he can do much in the building of sentiment for medical inspection of schools and other elements of a child hygiene program. His field of activity is, therefore, broad, and, while his limitations are definite, in that he can do little in some fields without assistance, either from the state health department or from some medical personnel within the county, it would seem that his advantages outweigh his disadvantages for certain groups of counties.

Whatever the stage of development, adequate supervision, under a well trained personnel, is a prime essential to success, for without such supervision there will be a surer tendency to degeneration of the program into inefficient activity, than will be the case with county health departments. In addition, financial cooperation by the state is necessary, not only as a stimulant to increased local organization, but also as a stabilizing factor and a measure lessening the danger of unwarranted interference by local political considerations.

Perhaps the fact should be emphasized that the whole plan of procedure herein outlined for the development of efficient health organization in a county as a unit of government, or in a group of counties as a unit of population, must be considered as a demonstration in achieving the form of health administration which is to be regarded as the satisfactory and permanent organization.

Memorial Building.

RURAL SANITATION *

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SALT LAKE CITY

In discussing rural sanitation it seems appropriate to consider, first, conditions affecting public health in rural districts as compared with urban; second, the unit best suited for rural health administration and, third, the cost of rural health administration.

CONDITIONS AFFECTING PUBLIC HEALTH IN RURAL DISTRICTS AS COMPARED WITH URBAN

The great advancement in preventive medicine during the last quarter of a century has led to the employment of a trained and full-time personnel in the health department of most of our larger cities. Many of these have accomplished notable results in reducing their community's death rate from preventable diseases. The concentration of a large population over a small area, making possible the occurrence of alarming epidemics, has made the necessity of maintaining such departments obvious. The greater financial resources of such communities have kept the cost within reasonable limitations. In rural districts, however, as the result of less apparent need and smaller financial resources, little effort has been made to improve public health conditions. Largely because of this the reduction in the death rates of cities during recent years has been greater than in the country districts. Because of the character and distribution of its population, and other inherent advantages, until recent years the rural death rate has been much less than the urban. And though the rural districts continue to have the natural advantages favoring a low death rate, a study of the trend in the death rate in the two areas during recent years indicates that the cities are the most healthful places in which to live.

In 1900 the death rate from all causes in the registration area, per thousand of population, was 17.6. Twenty years later, in the same area, it was 13.8, a decrease of 21.6 per cent. During the same period in the cities of this area the decrease was 27.5 per cent, while in the rural districts the decrease was only 7.9 per cent. In the comparison, no allowance has been made for the difference in age, sex and racial distribution. However, were the rates standardized, the contrast would be even more striking, as the populations of the cities contain a larger element of emigrants and colored persons, whose death rate is always higher than that of our native American stock, of which our rural population chiefly consists. Thus, it is seen that the country districts which heretofore have had a lower death rate than the cities have lost this advantage as the result of the superiority of urban public health administration.

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* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

TABLE 1.—*Urban and Rural Mortality in the Registration States of 1900* (Deaths from All Causes)*

	Death Rates per Thousand of Population			Decline	
	1900	1910	1920	Actual	Per Cent
Cities in registration states...	18.9	16.2	13.7	5.2	27.5
Rural part of registration states	15.2	14.7	14.0	1.2	7.9

* States comprising registration area in 1900: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, Indiana, Michigan, New Jersey, New York and the District of Columbia.

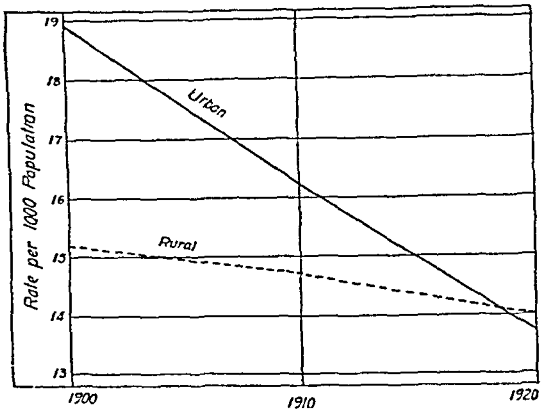

Chart 1.—Decline in urban and rural death rate in registration area as constituted in 1900 (deaths from all causes).

Wood[1] found, after examining more than half a million school children, that a larger percentage of rural school children were physically defective than city children. Likewise, Diehl and Sheppard,[2] after examining the students at a representative state university, found that those who had been raised on farms and in small towns presented a larger number of physical defects than those raised in cities, and that those from rural districts gave a history of having had the most diseases.

Nearly half of our population lives in rural districts, occupying 99 per cent of the total area of our country, representing a class least able to provide public health protection because of financial limitations, and therefore being most deserving of our consideration.

UNIT BEST SUITED FOR RURAL HEALTH ADMINISTRATION

The protection of the public's health is universally recognized as a government function. Its cost, even in rural communities, when paid by not too small a group of population, is rarely excessive. Five sixths of the counties in the United States are entirely rural. About 10 per cent have no incorporated towns, and more than 50 per cent have no towns of more than 2,500 population. To provide public health administration approaching adequacy in this area is a duty of the government, and of all the governmental units, the county, with the aid of the state, is best suited to assume the responsibility. It has the advantage, in most states, of having authority to levy and collect taxes, and, within certain limitations, to appropriate funds for public health purposes. The experience of many states has clearly shown that the county is the ideal unit for health service. The solution of the problem of providing efficient health administration for those living in rural districts lies in the development of efficient full-time county health organizations. When this plan becomes universal rather than exceptional, as is now the case, we may expect that the decline in the rural death rate will equal, if not exceed, that of the cities.

In the Northeast, every city and town of some size has had for a number of years a municipal health department; but in rural sections little has been done until recently. Health departments developed first in the larger cities. The states of North Carolina, Washington and Kentucky were the first to have a county place its rural health work on a full-time basis. Jefferson County, Ky., did so in 1908.

In the early development of rural health organizations, it was thought that the services of a full-time physician were sufficient for the maintenance of a rural health program; but later experience has shown that there is needed, in addition, one or more nonmedical assistants, the number depending on the population and resources of the county.

Dec. 31, 1923, there were 230 counties maintaining full-time rural health organizations. Dec. 31, 1924, there were 279, and Dec. 31, 1925, there were 299 organizations maintained in thirty-three states. The number increases from year to year. Once given a trial, it is very exceptional for full-time county health departments to be discontinued. Usually they are expanded as the need becomes obvious. Of the states having the largest number of county health organizations, Ohio leads the list, with more than half of her counties maintaining a full-time rural health organization, North Carolina and Alabama occupying second and third place.

TABLE 2.—*Number of Full-Time County Health Departments, Dec. 31, 1925*

Alabama	28	Maryland	6	Oregon	5
Arkansas	3	Massachusetts	1	Pennsylvania	2
Arizona	1	Minnesota	1	South Carolina	16
California	7	Mississippi	13	South Dakota	3
Colorado	1	Missouri	10	Tennessee	11
Georgia	21	Montana	3	Texas	5
Illinois	4	New Mexico	8	Utah	2
Iowa	1	New York	1	Virginia	15
Kansas	9	North Carolina	35	Washington	4
Kentucky	8	Ohio	47	West Virginia	8
Louisiana	11	Oklahoma	8	Wyoming	1

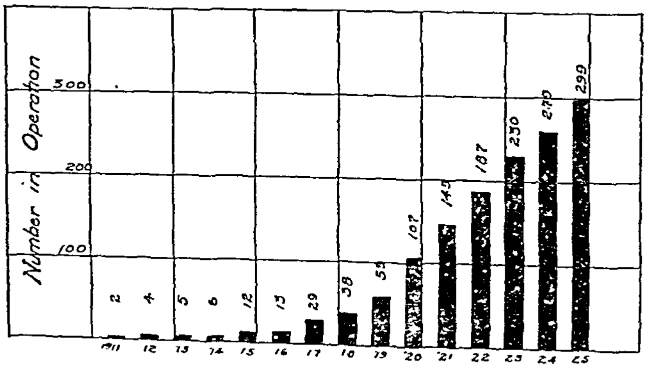

Chart 2.—Development of full-time county health departments in the United States.

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[1] Wood, T. D.: Health Essentials for Rural School Children, ed. 2, Chicago, American Medical Association, 1921.

[2] Diehl, H. S., and Sheppard, W. P.: Rural and Urban Health, J. A. M. A. 83:1117 (Oct. 11) 1924; J. Indust. Hyg. 7:481 (Nov.) 1925.

COST OF RURAL HEALTH ADMINISTRATION

The personnel necessary to make progress in the prevention of sickness will depend largely on the population and area of the county. The annual budget for a full-time county health department varies from $6,500 or $7,000 in a few counties having a small population to a much larger amount, Los Angeles County, Calif., having the largest budget. In the typically rural counties, with a population from twenty to thirty thousand, the average budget is $10,000. The staff usually consists of a physician as health officer, a clerical office assistant, a public health nurse and a sanitary inspector. In some instances the towns within the county combine their public health activities with that of the county and contribute toward the maintenance of the budget. Larger units maintain a laboratory, employing one or more technicians, several nurses and sanitary inspectors. In a few instances one or more small counties have joined in the formation of a health district. By pooling their resources, they have been able to maintain a full-time health organization.

A number of state health departments, to encourage the maintenance of full-time county health departments, contribute toward their support, which usually does not exceed 25 per cent of their total cost, and seldom more than $2,500 in a single county. The United States Public Health Service and the International Health Board of the Rockefeller Foundation are also financially cooperating with a number of counties. Such aid is given through and in the name of the state health department. The assistance is granted for a temporary period, and is discontinued or gradually diminished over a period of from three to four years.

In the average rural county having a population of from twenty to thirty thousand, a health unit costing $10,000 annually can make measurable progress in the prevention of sickness, assuming that its personnel is well qualified for such work. In such a county the per capita cost will amount to about 50 cents, and if the property value is reasonably high, the yearly tax will amount to about 0.5 mill.

Now that such organizations have been functioning for several years in many parts of the United States, a fairly definite program of work has developed which is more or less common to all. Briefly, the activities consist of the control of filth-borne diseases through improving sanitary conditions. The work among school and preschool children consists of the examination for physical defects of those in attendance at the schools throughout the county, clinics for the correction of the defects, dispensaries for typhoid inoculations, diphtheria toxin-antitoxin treatments, and smallpox vaccinations, infant welfare clinics, conferences with expectant mothers, classes for instructions of midwives, epidemiologic investigations, and public health education. This constitutes the basic activities of the average full-time health organization. In counties with additional public health problems, such as hookworm and malaria, special attention is directed toward their control.

Municipal health departments, employing for their full time a trained personnel, having long since passed the experimental stage. Their importance is recognized by all. The same is rapidly becoming true in the cost of full-time rural health organizations, as is shown by their increase from year to year.

For a state health department to accomplish the maximum results in reducing the state death rate from preventable diseases, it is essential for at least its more populous counties to maintain a full-time health organization, employing a trained personnel. Subsidy by the state health department insures efficiency by eliminating political favoritism in the selection of the staff members of the county health unit, and provides the state health department with a logical means of expansion by supplying, at a minimum expense, field workers who are directly under their supervision. Though nearly all state health departments have adopted the policy of encouraging counties to maintain a full-time health organization, their development will continue to be more rapid in the states whose health department gives the counties the most encouragement and reasonable financial assistance.

SUMMARY

1. Until recent years the death rates in rural districts, as the result of many natural advantages, have been much lower than urban death rates.

2. The decline in the death rate of the registration area as constituted in 1900 indicates that the rural districts have lost this advantage as the result of superior health administration in the cities.

3. Surveys show country children to have more physical defects and give a history of having had more diseases than city children.

4. Nearly half of our population live in rural districts. Three fifths of our school children, approximately twelve million, attend country schools.

5. Adequate health protection for those living in rural districts should be furnished by the government, and of all governmental units, the county, with the aid of the state, is best suited to assume the responsibility.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BISHOP AND COVINGTON

Dr. W. S. Leathers, Nashville, Tenn.: It will be well to emphasize the fact that in studying health problems of the state, Dr. Bishop finds that 81 per cent of the population is in fifty-four out of a total of ninety-five counties. There are a number of counties in Tennessee that are sparsely populated, but in dealing with the legislative body it becomes necessary to enlist the interest of representatives from all portions of the commonwealth, and for this reason it is essential, in projecting the plan of health work, to offer some scheme or method by which people in all parts of the state, even in counties such as those mentioned, may be benefited by the activities of the state department of health. It is obvious that it is more difficult to enlist the interest of people in counties that are not well populated in the expenditure of funds for the establishment of a county health organization. It is, however, imperative to have some plan that will give a degree of protection to the citizenship of such counties and with the objective of having a county or local health organization when conditions permit such advancement. I am confident that there are many counties in most of the states that present the same problems with which Dr. Bishop is confronted in Tennessee. The question then is, "What shall be done with a county that is not financially able to have what we regard as an ideal development; namely, a county health department?" The plan suggested by Dr. Bishop is to use a sanitary officer or an inspector, who may be a layman or a nurse, to do only environmental sanitation in order to breach the gap pending the more desirable development of health work. This work will require the improvement of sanitary conditions in and around the homes, the schools and places of public utility. The success of the work will depend largely on having intelligent and well trained persons for such service. The University of Tennessee has made some arrangement for the training of inspectors, and after this training is obtained they may be tried out by being afforded definite opportunity for continued work in a county under the direction of a state inspector who may be placed in charge of this service for the state at large. There are, of course, some dangers in advocating a course of this kind. The health work of a county, regardless of what steps may be used in its development, should finally be placed in the hands of a medical man. I understand that in some states this plan has been attempted with discouraging results, while in other states it has been tried with a definite measure of success. Too much emphasis cannot be placed on affording opportunity for training persons who are to engage in work of this kind. A layman with reasonable intelligence, energy and common sense, and understanding the objective of the work to be done, should prove a success as an inspector, and could be used with advantage in counties that are sparsely populated, in the development of a more complete and efficient local health organization. In the use of sanitary inspectors in counties independently or in association with part-time health officers, it is essential that the state health officer use judgment to see that whatever activities are undertaken are determined by him, and that no health work be done by a health inspector which will involve directly medical service, the idea being that this method is particularly applicable in improving environmental sanitation, creating wholesome sentiment and stimulating the people to assume increased responsibility, even though it be a sparsely settled area, in the development of efficient health work. Such a plan may lead in time to three or four counties becoming grouped together into a sanitary district and placed in charge of a medical officer of health with nurses and sanitary inspectors.

Dr. A. T. McCormack, Louisville, Ky.: We in Kentucky are especially grateful because under Dr. Covington's leadership the original health departments, except the one in Jefferson County, were created and were inspired by him. In regard to the matter of the sanitary officer, in the plan suggested by Dr. Bishop I am in opposition. I am opposed to all substitutes and subterfuges by which somebody else, partly trained or half trained, becomes a substitute for a medical officer, a medical practitioner. The basic law of Kentucky gives me no option in the matter, the only person who is eligible for the county officer being a physician. We are trying to get out of the minds of the sanitary instructors that they are to go from place to place and only inspect. They find out what is wrong and stay there long enough to instruct the people as to what is right. We have had the public health nurse as our initial step toward the development of the all-time health department in more than half the counties of Kentucky, but the public health nurse and the sanitary instructor should be absolutely under the control and guidance of the health officer. Where that is done, the sanitary instructor can be used where a part time health officer absolutely controls the instructor, provided, as in Alabama or Kentucky, the health officer is the supervisor and controller. We are gradually increasing the number of our health departments. Recently a study was made of the state by a commercial organization employed by the state under the title of an efficiency commission. Their constructive recommendations have been extremely interesting. They urge the extension of the health departments in those counties where the half mill tax will enable them to be adequately supported on a budget of not less than $10,000, but in approximately one third of the state it will probably always be necessary for the state to exercise the active supervisory control of health education and health work. That is because those communities are too sparsely settled and not economically able to carry on minimum public health work with the minimum public health standard of efficiency that we should demand; and for that reason they urge that the state health department should be sufficiently equipped with educators and officers to enable them to get to these distinctly rural districts, that the population of them may be kept well and that they may be kept populated. The Alabama plan of operation is ideal. The responsibility for the construction of the public health program is put squarely and legally up to the medical profession of the state. We have attained approximately the same degree of recognition in Kentucky, but not so efficiently as in Alabama. We have been forced to take our health officers from the local physicians of the county in almost every instance. We started out with highly trained health officials, but we have been gradually forced to take the men who are practicing general medicine in the country districts of the county and send them over for training in public health work, and then bring them into our own office and work them there for a time and then put them back into the county from which they came, that they may know the geography and biography of the people among whom they are to work. Public health is needed as much as any other commodity, and the county health unit will enable us to put this necessity across to the people that live in these places.

Dr. S. W. Welch, Montgomery, Ala.: I was much impressed with the idea advanced by Dr. Leathers that it will be practically impossible to conduct a nonmedical unit without the strict supervision of the state health department. The selection of these nonmedical assistants or directors of public health in any county not only takes a great deal of care, but in the experience of Alabama has invited catastrophe. We have failed in every instance in which we have undertaken it. We have not been able to succeed at all without the personnel of a health officer and a secretary in the office to take care of the records, a public health nurse and a rural inspector. That takes a budget of about $10,000, and the system is just the same in the smallest as in the largest county in the state. In the county in which Birmingham is located there are between 300,000 and 400,000 people, and a budget of $225,000 is required. A mistake is frequently made in the choice of the personnel of the health department. I would rather have an Alabama physician; but if I cannot get one I want a man just out of school who has no affiliations or ideas that have crystallized through years of practice and association with a different type of people. He can be molded. That is one of the basic things in the success of Alabama. There must be sufficient personnel to do the work. One person in a rural county, it does not make any difference how brilliant he may be, how efficient he may be, cannot do work enough to get it over to the people that this thing is necessary. He cannot see enough people. He cannot visit homes enough, and in a rural population it is a home to home business. It is necessary to get into the homes of the people and get them personally interested. The sanitary inspector and public health nurse are of tremendous aid to the health department because they come in actual contact with people in their homes and in their everyday activities.

Dr. J. A. Hayne, Columbia, S. C.: Alabama has a very good system, but it was borrowed from South Carolina. In 1879 the state board of health was founded on principles that other states are now adopting. We have gradually returned to the basic principle that public health is essentially a medical problem and should be in the hands of the medical profession. Every now and then there are little excursions into the realm of getting a layman to do what the physician should do and it always ends in disaster. To take a man and train him for three months, even under the supreme leadership of Dr. Leathers, would not turn that man into an efficient health officer, and I believe it would be dangerous to turn such a man loose in a county to do as he pleased under the supervision of the state health officer, who is probably away attending some convention.

Dr. G. M. Anderson, Cheyenne, Wyo.: I, too, disagree about placing a substitute for a physician. Social organizations, industrial organizations, women's clubs, parent teachers' associations, are all striving to the end that lay people be put in charge of public health work. It is vicious and wrong and dangerous for medical men even to intimate that we are thinking of countenancing such a thing or dreaming of it. Out in Wyoming we do not have a colored problem, except the porters on the trains, and they do not have any definite residence, and there is no malaria or hookworm. Mosquitoes and hookworms do not do well in a climate of 30 or 40 degrees below zero, but we have an abundance of rural life and politics. These are our two leading problems, and we have found that the county health unit contends very efficiently with both of these troubles. Dr. Covington, representing the International Health Board, came to our state soon after I became health officer, met the council of our largest city and presented the matter of a county health unit. At once, while he was yet in the council room, the council passed a resolution, endorsing the plan and voting money; the county commissioners did likewise the next day, and so we started off with our first county health unit. It has been a tremendous success, and I am very sorry that we have not more of them in the state of Wyoming. The trouble in our state is that education has been lacking in public health. We have part-time health officers, but they are physicians, not laymen. As long as I am in the state and have any influence, there are not going to be any lay health doctors, because that is what they will be called. They call druggists and chiropodists doctors, and it won't be long before they will call these lay health officers doctors.

Dr. E. L. Bishop, Nashville, Tenn.: The sanitary officer is not at all intended to be a substitute for the county health department, and certainly there is not the slightest idea of making health officers out of laymen. Tennessee has a physician as full-time or part-time health officer in every county except one. The activity of the part-time health officer would be supplemented and not supplanted by the activity of the sanitary officer. With reference to training, especial emphasis is placed on training men in what not to do, rather than what to do, in order that they may have a clear idea of their limitations and not trespass on other fields of activity. In reply to Dr. Welch, I would say that these men will be under the most careful local and general supervision by well qualified men. Our problem in Tennessee is rather different from the problem in Alabama, in that with almost equal populations, Tennessee has ninety-five counties, as compared to only sixty-seven counties in Alabama. Then, too, there is a concentration of population in a few Tennessee counties, and as a result, a wide range of population between our largest and smallest counties, the extremes being a maximum of a quarter of a million, and a minimum of twenty-five hundred. As the population decreases, the tax rates increase; thus, we have a serious problem in the economics of our local full-time work, a problem that cannot be solved in its entirety by the county health department. We would be derelict in our duty if we did not attempt a solution.

Dr. P. W. Covington, Salt Lake City: Dr. Bowden emphasizes the difficulty of convincing county officials of the superiority of the full-time health department as compared with the part-time department, which is usually a health department in name only, as its activities are confined almost entirely to the treatment of the indigent sick. No doubt all who have been interested in the promotion of full-time rural health organizations have at times found it difficult to convince county officials of the importance of providing public health protection for those in rural districts. It is made difficult, as has been brought out, because of the less apparent need for such protection in rural areas as compared with urban, and because of the more limited financial resources in such areas. In promoting rural health organizations, those who have been most successful have conducted an intensive campaign throughout the county for the purpose of acquainting the people with the importance of such an organization prior to presenting it to the appropriating body—the county commissioners. When sufficient sentiment has been aroused, the commissioners as a rule act favorably. Drs. McCormack and Welch brought out an important point, that of selecting local physicians having the necessary training in preventive medicine and sanitation to fill the positions as full-time county health officers.

SECONDARY TUMORS OF THE BRAIN*

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ROCHESTER, MINN.

Approximately 5 per cent of the tumors of the brain examined at the Mayo Clinic have metastasized from malignant disease elsewhere in the body. The precise frequency of these secondary tumors of the brain is doubtless somewhat higher, but only by universal necropsy service could accurate data be acquired. The occurrence of metastasis to the brain during the course of malignant disease, whether or not it is productive of symptoms, is of especial interest to the pathologist; but when a considerable number of patients present themselves for diagnosis with symptoms and signs of brain tumor as the initial evidence of malignant disease elsewhere, the problem is one of serious import to the physician. It is this phase of the subject of secondary tumors of the brain that I wish to discuss in the hope that an unsatisfactory state of diagnosis may be improved and that, if possible, the embarrassment of both diagnostician and therapist may be lessened.

When one is convinced that a patient has a brain tumor, its accurate localization is likely to absorb one's interest in the hope that it may be mitigated or eradicated by appropriate treatment. To ask whether this tumor may not be metastatic, especially when there is no complaint suggesting disease elsewhere, might appear to be an inquiry too remote to be practical. Yet the frequency with which the whole nervous system is directly involved by metastatic malignant disease is such that we have been impelled to extend the routine examination gradually in the hope that the source of the mischief may be located. Thus, the presence of brain tumor requires a careful survey of the body to locate or exclude malignant disease elsewhere, so far as possible. Too often marked mental and physical deterioration may hinder the carrying out of an examination as desired, and has occasionally interfered with the development of data which would have allowed an accurate diagnosis of the essential disease.

The organs of the chest and abdomen should be examined to learn whether their size, shape, location, consistency and mobility are normal. The bones, glandular system, skin, oral cavity and pelvic structures should be carefully investigated. Symptomless, small and indefinite masses in the abdomen or elsewhere, found by routine examination, should be examined repeatedly, because even though they may be dismissed in the beginning as of no significance they may later astound one by their size and importance. When possible, it is very advantageous to investigate the nature of all tumors removed in recent years by further microscopic study. A roentgen-ray examinaion of the lungs and head is very important as concerns both the internal organ and the skeletal portions. When evidence of secondary tumors is sought, such reports as healed tuberculosis, miliary tuberculosis, pleural adhesions, pneumonoconiosis and pleural effusions should be received with a suspicious reserve, and examination should be made at sufficient intervals to determine whether these signs are constant. The value of repeated examination is clearly proved when shadows make their appearance after previous plates have been negative. The lungs may be the seat of primary carcinoma, and it is particularly prone to metastasize to the brain and meninges, and to the bones of the spine. When carcinoma begins near the periphery of the lungs, it may extend through the pleura without effusion and infiltrate the tissue of the chest, producing no symptoms, or it may infiltrate the brachial plexus near the spine and cause severe pain. Such extensions may long escape detection on roentgen-ray or physical examination. The lungs are also a frequent site of secondary tumors which may be recognized early by roentgen-ray examination. The roentgenogram of the chest also exhibits a goodly portion of the body skeleton, and in this may be seen secondaries of those tumors that select the bones. A roentgenogram of the head seldom gives evidence of secondary tumors in the brain, although the skull is quite often invaded by metastatic tumors, notably by hypernephroma. Suspicious signs in the bones of the chest or skull, themselves not diagnostic, should lead to further study of the osseous system for more positive data. Carcinoma of the nasopharynx often invades the skull, and its first clinical symptoms may be ocular palsy, chiasmal signs, or involvement of the fifth nerve and other cranial nerves. All brain tumors are sent to the rhinologist for study of the nasopharynx.

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* From the Section on Neurology, Mayo Clinic.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

Roentgen-ray examination of the gastro-intestinal tract, cystoscopic and pyelographic examination of the kidney and its pelvis, and bronchoscopic examinations have been made at times in response to some vague symptom or suspicion, occasionally with success. Again we have been disarmed by negative findings when in fact a lesion was present. This is especially likely to occur in cases of hypernephroma, since when the tumor is small or located peripherally it may exhibit no signs or symptoms. In one case, slight hematuria suggested an examination of the kidney. It, however, appeared to be normal despite the presence of hypernephroma, which produced the secondary tumor of the brain which was unfortunately explored. It is manifestly impossible to submit all cases to such a full investigation, yet to this restriction and to the imperfection of our technical methods must be charged our inability to reveal the correct sequence of the disease. Often circumstances are such that a period of observation sufficiently long to allow reexamination at reasonable intervals, especially roentgenologic examinations of the lungs, is impossible. Our anxiety to relieve the patients may also urge us to undertake surgical measures which at best would be but slightly palliative.

The literature on this subject is quite extensive, and by reference to the articles of Spiller and Weisenburg,[1] Hassin and Singer,[2] and Barron,[3] the important contributions may be found.

The histories of two patients are given in some detail to illustrate the clinical problem. The remainder have been tabulated in appropriate groups (tables 1, 2 and 3).

ILLUSTRATIVE CASES

Case 1.—A man, aged 40, came for examination, March 4, 1924. Five months before, he began having "catches" or "stitches" in the right hip. Two weeks later he had an attack while at work in which the right leg drew up in a spasm, which lasted for several minutes. After a short interval another similar attack occurred, and he stopped working. Thenceforth, there was a definite, increasing drag in the right leg in walking. Ten days after the weakness appeared in the leg, the patient found on awakening that the grip in the right hand was weak. During the next six weeks this gradually improved, although slight weakness persisted. During the five months he had a dull left frontoparietal headache almost every morning, which lasted for several hours. Failure of vision began about one month before his examination, and was progressive. Two weeks later he had diplopia for about one week. During the week of examination he had four jacksonian attacks. Convulsive movements began in the right foot, right thigh and right arm. About five weeks before, he had a similar attack. During the last few years he had been drowsy and stupid.

The general physical examination was negative. The urine was normal except that blood and a few pus cells were found on three examinations of the sediment. The roentgenogram of the chest was negative, and that of the head suggested erosion of the left frontoparietal area. The blood count was normal, and the Wassermann tests of the blood and spinal fluid were negative. The vision of the right eye was 5/60, and of the left eye 1/60; both pupils reacted sluggishly to light; the fields were negative; the blind spots were markedly enlarged, and there were bilateral choked disks, right, 3 diopters, and left, 4 diopters.

Because of the blood in the urinary sediment, an examination of the kidney was requested. The roentgenogram of the kidney was negative. Both ureters were catheterized, and bloody urine was obtained from both. No pyelogram was taken. The diagnosis of the urologist was mild pyelonephritis. The right hand showed slight weakness, the right hand and calf complete paralysis, and there was also marked weakness of the right thigh. The reflexes in the right arm and leg were quite exaggerated, and there was no response on stimulating the right sole. The reflexes on the left side were normal. Sensation was normal so far as could be determined in the patient's drowsy mental state. The coordination of the right hand was quite impaired, and paralysis of the right leg prevented a satisfactory test. The evidence for brain tumor was quite plain. Our suspicions were aroused by the roentgenogram of the head and the bloody urinary sediment, but the examination seemed to explain the matter. The roentgenogram of the chest failed to reveal disease in the lungs.

The upper left rolandic area was explored, but no lesion was found. The patient developed Cheyne-Stokes respiration and died the following morning. Necropsy examination disclosed carcinoma of the right kidney, with metastasis to the lungs and left cerebrum.

Case 2.—A man, aged 50, came for examination, Oct. 20, 1923. Ten weeks before, when his team ran away, he was thrown to the pavement and rendered unconscious for about half an hour. A laceration of the right forehead caused by the fall was repaired by suture. After the accident, he had a continuous right frontal headache. The day following the injury, weakness in the left leg was noted. Two weeks later the left hand became uncertain in its movements, and then the weakness in both extremities gradually progressed. During the last six weeks when there were paroxysms of more severe headache he noted tingling and jerking in the left arm and leg. He was dull and apathetic.

The general examination was negative. The urine was normal. The roentgenograms of the head and chest were negative. The vision was 6/30 in both eyes; pupils, reflexes and fields were normal. The left disk was hyperemic; the right disk showed early evidence of a choked condition. The right blind spot was enlarged. The patient had well marked hemiplegia on the left, bilateral Babinski and Chaddock signs, increased reflexes on the left side, and a slight reduction of pain and tactile sensibility on the left side.

November 5, exploration was made over the right motor area. No massive hemorrhage was found, but considerable blood was found beneath the arachnoid, and the convolutions had a hemorrhagic appearance. In view of the progressive paralysis and early choked disk, it was seriously doubted whether this sequence was entirely due to the injury. It seemed possible that the accident was due to an epileptiform seizure which was the initial symptom of a tumor. There was no evidence of malignant disease elsewhere. The operative findings did not explain the syndrome satisfactorily. For a few days following the operation the patient seemed somewhat improved; then he declined gradually, and died a month later.

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[1] Spiller, W. G., and Weisenburg, T. H.: Carcinoma of the Nervous System, with the Report of Eleven Cases, J. Nerv. & Ment. Dis. **33:** 500-524, 1906.

[2] Hassin, G. B., and Singer, H. D.: Histopathology of Cerebral Carcinoma, Arch. Neurol. & Psychiat. **8:** 155-171 (Aug.) 1922.

[3] Barron, Moses: Carcinoma of Lungs: A Study of Its Incidence, Pathology and Relative Importance, with a Report of Thirteen Cases Studied at Necropsy, Arch. Surg. **4:** 624-660 (May) 1922.

Necropsy examination, December 3, revealed carcinoma of the left kidney with cystic metastasis in the right parietal area, metastasis to the lungs, pleura and suprarenals, and terminal bronchopneumonia.

CLASSIFICATION OF CASES OF METASTATIC TUMOR OF THE BRAIN

Cases of metastatic tumor of the brain may be readily arranged in four groups.

TABLE 1.—*Metastatic Tumor of the Brain: Group 1*

Case	Age, Years	Onset of Symptoms Before Examination, Months	Duration of Symptoms, Months	Principal Symptoms and Signs in Order of Occurrence	Roentgen-Ray Observations	Necropsy Observations
1	40	5	5	Headache; jacksonian attacks; right hemiplegia; choked disks	Lungs normal.....	Hypernephroma with metastasis to left frontal lobe and lungs
2	50	2.5	4	Injury to head, headache; progressive hemiplegia; choked disks	Lungs normal; head normal	Hypernephroma; metastasis to right parietal, lungs, pleura, suprarenal and lymph glands
3	40	12	13	Headache, vomiting; vertigo; weakness of right arm; right Babinski; choked disk	No ray............	Primary carcinoma of lung; multiple metastasis to brain, lungs, liver and glands in general
4	50	12	13	Headache, diplopia, paralysis left external rectus; stiff neck; dulness and swelling around first rib; enlarged gland above clavicle	Miliary tuberculosis; dense infiltration of both lungs	Primary carcinoma of lung; tuberculosis of lungs; carcinosis of pia-arachnoid
5	55	8	3	Depression, worry; (sugar in urine twice); delirium; stupor	No ray (too ill)...	Carcinoma of pancreas; metastasis to lungs, brain, liver, and general
6	18	6	8	Choked disk; tumors on skull	Metastasis to lungs and skull	Hypernephroma with metastasis to left suprarenal, lungs, and general
7	3	4	4.5	Hydrocephalus; exophthalmos; choked disk	Metastasis to skull	(Died four days later)
8	27	8	16	Left frontal headache; pain left side of face, anesthesia and paralysis left, 5; left ptosis, left total ophthalmoplegia; four months later abdominal mass	No ray............	(Died eight months later)
9	32	24	?	Headache, failing vision; choked disk (tumors on skull); enlarged glands; many palpable tumors	Metastasis to skull	Hypernephroma; no necropsy
10	29	2	3	Convulsion; headache; vomiting; bloody fluid in chest; choked disk	Fluid in chest, primarly in lung?	(Died six weeks later)

TABLE 2.—*Metastatic Tumor of the Brain: Group 2*

Case	Age, Years	Onset of Symptoms in Central Nervous System, Months	Principal Symptoms and Signs in Order of Occurrence	Diagnosis	Roentgen-Ray Observations	Necropsy Observations
1	58	5	Numbness left face; deafness left ear; ptosis left; diplopia; gland in neck; left ophthalmoplegia; blind left eye	Lymphosarcoma of nasopharynx	Lungs normal; head normal	Verified at necropsy performed by home physician two months later
2	43	2	Pain left face; diplopia; gland in neck; anesthesia left fifth nerve; palsy left external rectus; left ptosis	Carcinoma of nasopharynx	....	Died two months later; no necropsy performed
3	49	12	Diplopia; pain right ear and eye; anesthesia right fifth nerve; motor paralysis fifth nerve	Carcinoma of nasopharynx first discovered four years ago	Chest normal; head normal	Died fourteen months later, December 19, 1921
4	41	6	Diplopia; pain left eye; hoarseness, numbness left face and tongue; gland left neck; fifth, sixth, ninth, tenth and eleventh nerves involved	Carcinoma of nasopharynx	....	Died two months later; no necropsy performed
5	40	4	Occipital headache, dizziness, vomiting, failure of vision, ataxia; choked disks; hard thyroid	Carcinoma of thyroid	Metastasis to lungs	Died four months later; no necropsy performed
6	32	8	Bloody sputum, pleural effusion, headache, failure of vision, diplopia, ataxia left arm; right Babinski; several tappings of pleura; effusion bloody	Malignancy, primary?	Fluid in lungs	Neuroblastoma, both suprarenals; general metastasis to brain and lungs

Group 1.—This group is composed of cases of latent malignant disease, the initial symptoms of which are due to cerebral metastasis. Table 1 gives the important data concerning the ten cases that are of especial interest in this paper.

As the table indicates, the span of life following the onset of the symptoms is unusually short in cases of brain tumor. All the patients presented themselves quite late in the course of their illness, enabling us to see nearly the full evolution of the clinical picture. Thus, evidence was attainable on physical examination of six of the patients which determined the presence of secondary tumors elsewhere or localized the primary lesion. In three cases the symptoms were confined to the nervous system and unfortunately exploration was performed. In two of the three patients the roentgenograms of the lungs appeared negative, whereas at necropsy metastatic lesions were present. In one of the patients operated on no roentgenogram of the lungs was taken, and this patient had primary carcinoma of the hilum of the lung. Such experiences have taught the importance of roentgen-ray examination of the lungs, and it is now a routine procedure. A roentgenogram of the skull is important, as table 1 shows, although in two cases the metastatic lesions were palpable. In seven cases the primary lesion was not found during life. In case 10 the primary lesion may have been covered by the pleural effusion. Two guinea-pigs were inoculated with pleural fluid and neither developed tuberculosis, nor could bacilli be found in the fluid. In case 4 the physical signs at the left apex strongly suggested a tumor, but the roentgenologist interpreted the "dense infiltration of both lungs" as tuberculosis. Gross and microscopic examinations at necropsy revealed both carcinoma and tuberculosis. In case 8 an abdominal mass with ascites was found a year after the symptoms began. Patient 7, a child with hydrocephalus and choked disk with metastasis to the skull, died at home shortly after dismissal, and necropsy was not performed.

Group 2.—This group is composed of cases of malignant diseases which are symptomless but demonstrable on examination, and the initial symptoms of which are cerebral. In this group are included the cases of carcinoma of the nasopharynx, and two cases of carcinoma of the thyroid (table 2).

Group 3.—In this group belong the cases in which malignant tumors have been surgically removed, and cerebral symptoms are the first evidence of recurrence. There were eight such cases: three developed following removal of carcinoma of the breast, one each from carcinoma of the sigmoid, hypernephroma, sarcoma of the testis, malignant mole, and tumor of the parotid gland (table 3).

Group 4.—In this group are the cases of malignant disease which, during its clinical course, metastasizes to the nervous system, with or without the production of definite symptoms. There are sixteen cases in this group, fourteen of which present a variety of signs and symptoms of involvement of the brain. Necropsy revealed carcinoma of the dura, pia and arachnoid in one case, and metastatic tumors of the brain, dura and skull in another. In two cases at necropsy there were latent secondary tumors. As these cases are of secondary interest to the clinician, they were not tabulated.

To these groups might be added another which is of clinical interest, but not strictly a part of this subject. I refer to cerebral affections which may complicate the course of malignant disease yet have no definite relation to it. The manifestations in a number of such cases were attributed to metastasis to the brain, but as several patients have lived longer than they could with metastasis, it is more than likely that such symptoms had an origin unrelated to the local malignant disease. Several writers have described cases with cerebral symptoms during the course of carcinoma in which there was no evidence of invasion of the nervous system by carcinoma at necropsy to explain them. Such symptoms have been ascribed to some toxic influence exerted by the carcinoma. Thus far I have had no experience with such cases.

Table 3.—*Metastatic Tumor of the Brain: Group 3*

Case	Age, Years	Operation	Cerebral Symptoms	*Roentgen-Ray* Observations	*Necropsy* Observations
1	46	Carcinoma of sigmoid two years ago	Recently mental symptoms, nystagmus, ataxia....	....	Recurrence in abdominal wall, inguinal glands, left *lung, right cerebellum*
2	40	Mole, one year ago and five months ago	Ten days ago, delirium, headache, vomiting; fundus negative; no focal signs	None...............	Melano-epitheliomatosis; much metastasis to brain; general
3	55	Carcinoma of left breast two years ago	Two months ago, headache, progressive weakness of left hand and leg; left hemianesthesia; biopsy of axillary gland, carcinoma	Lungs normal; head normal	Death reported three months later
4	55	Hypernephroma six years ago	Five months ago, weakness of right leg, then right arm; convulsions 2; headache, mental impairment	Metastasis to lungs	Death reported two months later
5	23	Right parotid tumor operated two years and one year ago	Eight months ago, headache, vomiting, diplopia, choked disk; ocular palsy; atrophy left twelfth nerve; blind left eye; Babinski sign	None...............	No report
6	28	Sarcoma of left testicle six months ago	Six weeks ago, failure of vision; pain in eyes, blind, choked disk, abdominal mass	Mass in mediastinum	Death reported three months later
7	42	Carcinoma of left breast three years ago	Four months ago, cramping and weakness right foot. Four weeks ago right hemiplegia; improved; headaches for two months; jacksonian spells; choked disk	Lungs normal	No report
8	55	Carcinoma of right breast two years ago	One month ago, weakness of left arm, then left leg; speech poor; headache for three weeks, vomiting; fundus normal	Metastasis to lungs	No report

CONCLUSIONS

1. Metastatic tumors present no essential characteristics which distinguish them from primary tumors of the brain.

2. All patients presenting evidence of brain tumor should be carefully studied for evidence of secondary tumors or a primary tumor elsewhere.

3. Roentgenograms of the chest and skull should be taken as soon as symptoms suggesting brain tumor appear, both for their immediate value and for comparison wtih later studies.

ABSTRACT OF DISCUSSION

Dr. Peter Bassoe, Chicago: To my knowledge there is little in the literature about metastatic hypernephromas of the brain and metastatic brain tumor secondary to tumor of the lung. I think that all of us who have had the opportunity to see cases of metastatic carcinoma of the brain have been annoyed at the failure to recognize the primary tumor. It has struck me that there is, perhaps, no kind of brain tumor in which there may be such extensive growth in the brain with so little increase in brain weight and brain volume and so little prominence of the general symptoms of brain tumor. I have had that impressed on me several times when as much as two thirds of a hemisphere has been replaced by carcinoma, and the brain not materially changed in shape or weight. We then are likely to think that the patient has some other kind of lesion than a tumor. One such patient that I saw was a woman who went to the railway station to buy a ticket and could not remember the name of the station she wanted to reach. She was referred to the matron there and sent out to the hospital. We found that the patient had been at the same hospital some years before and had a carcinoma of the breast removed; so there was every reason to suspect that she had metastatic carcinoma of the brain, but there were no symptoms except the aphasia. There was no hemiplegia, no choked disk; yet the tumor was very large. I do not know of any kind of brain tumor in which I have so often had a report of a false positive Wassermann test where necropsy failed to reveal any sign of syphilis. I remember one patient who had a right hemiplegia and aphasia, and no signs of a primary tumor. A brain tumor in the left hemisphere was found. The patient died a week later and there was a tumor three times as large on the other side.

Dr. William House, Portland, Ore.: A thought that I believe Dr. Shelden has not suggested is that metastatic tumors of the brain tend to be multiple much more frequently than primary tumors. Multiple tumors are frequently difficult of localization. If there are symptoms pointing to a brain tumor that we cannot localize, we should always think of multiple tumors; and whenever we think of multiple tumors, it is wise and proper to think of them as probably metastatic, and therefore, as Dr. Shelden has suggested, usually not operable. Moffitt, in 1911, discussed a number of cases of hypernephromas, in many of which there were metastases to the brain. He commented particularly on the salmon tint of these secondary tumors. Shortly after hearing his paper, while doing a necropsy which by agreement was to have been limited to the brain, we found a tumor having this peculiar tint. This suggested the probability that it was a hypernephroma, metastatic in origin, and on further search the original lesion was found in the right kidney. Melanotic sarcomas, more frequently than is supposed, cause metastases in the brain. Sometimes the original lesion is very small or in some obscure place. About a year ago I saw a patient who obviously had a brain tumor. Half a dozen competent men had gone over the patient without discovering any other lesion except what were thought to be a series of bruises. In placing our finger on one of these, it was noted that there was a mass about the size of a bead with rings of discoloration about it. This was removed and proved to be a melanotic sarcoma, which was but one of a number of other deep-seated lesions in the musculature from which the cerebral neoplasm was undoubtedly secondary.

Dr. A. L. Skoog, Kansas City, Mo.: Of my comparatively few cases of multiple tumors of the brain, I have two that remain vividly in mind. In one case a primary tumor of the breast had been removed about four years previous to the onset of a paraplegia. Diagnosis of carcinoma of the vertebrae was made and proved by roentgen ray and later necropsy. Also, during the course of observation, some brain symptoms appeared, and a diagnosis of metastases to the brain was made. These metastases in the brain were also proved by necropsy, and the interesting feature of it was that the type of cells in the brain, in the vertebrae and in the skull corresponded exactly to the adenomatous cellular type found in the mammary gland. Another interesting case was one of a man who came in with evident symptoms of brain tumor, including choked disk, greatly increased pressure in the cranium, violent headaches, and vomiting. Localization was made by Sir William Gower, and one by Sir Victor Horsley; and several of the other staff men examined the patient. Operation was performed by Sir Victor Horsley, and a tumor removed where one of the localizations was made. This proved to be a carcinoma corresponding to glandular tissue somewhere. The man died about two months later. Necropsy revealed thirty or forty tumors scattered through the brain, and each man had the pleasure of having his localization verified. Furthermore, the tumors corresponded to an innocent looking small one in the sigmoid region that apparently never had given rise to any symptoms.

Dr. George W. Hall, Chicago: One point that needs further emphasis is the fact that the primary lesion in the lung is frequently overlooked. I have had the privilege of seeing two cases in the last six months, one less than a month ago, both of which went to necropsy. One was in a woman who was operated on for carcinoma of the sigmoid two years previously. She came into the hospital with a definite brain lesion, and because of the history the diagnosis of carcinoma of the brain was made, but in the endeavor to connect it with the operation two years previously, we found a difficult problem, because there was no localizing evidence of recurrence in that region. The internist looked over the lungs very carefully, but was unable to detect any lesion. But the roentgen-ray examination showed the lesion present in the lung. So I should like to emphasize still further the importance of the roentgen-ray examination of the lung even in the absence of clinical signs. The second important thing that he brought out was the extreme rapidity of these cases in running their course. These two patients were under observation in the hospital only three weeks before they died, and necropsy showed the lesion in the brain. Another thing is that unless one is able to find the primary lesion one will not make a diagnosis. The chances are that a diagnosis of something else, such as a diffuse encephalomyelitis, will be made, and necropsy will show a carcinoma of the lung with secondary lesions in the brain. In those few cases I have seen, the eyegrounds gave us no information whatever. The appearance of the disk was apparently normal.

Dr. Harry L. Parker, Rochester, Minn.: The phase of the problem I was particularly interested in was involvement of the central nervous system secondary to carcinoma of the lung. I was able to collect four cases in which this had occurred. In one case there was involvement of the spinal cord and vertebrae; in another, involvement of the posterior roots of the upper dorsal region, in a third case involvement of the brain, while in the last case there was involvement of the meninges. As brought out by Dr. Hall and Dr. Bassoe, in some of these cases of carcinosis there may be very little evidence of increased intracranial pressure. This was manifest in the one patient whose brain was literally peppered with carcinoma nodules. It has been suggested that the carcinoma dissolves or destroys the brain so completely that there is a substitution of tumor for brain substance rather than a pressing aside of the brain material. That is, in the aggregate there is no increase in the intracranial contents. The destroyed products are carried away by the phagocytes in the blood stream. This was evident in one of those four patients. It was very difficult in those four cases to find the primary carcinoma. In one patient that Dr. Shelden has mentioned, there were tuberculosis and a primary carcinoma developing from the tuberculosis, but the patient on two occasions had a positive Wassermann reaction, which is in accord with what Dr. Bassoe has said. This made a complicated and difficult problem of whether the patient had tuberculosis and tuberculous meningitis, or whether she had carcinoma with carcinomatous meningeal involvement, or whether it was a case of syphilis. As a matter of fact, at necropsy there were no evidences of syphilis, but a few carcinoses of the brain. In the other case the lung was not examined roentgenologically, and we missed it. However, in these lung carcinomas the growth starts from the hilum and spreads throughout the lung. Unless the carcinoma has grown beyond the margins of the sternal shadow, it may be completely missed by the roentgen ray.

Dr. Walter D. Shelden, Rochester, Minn.: The pathology of secondary tumors of the brain has been well written by Spiller, Weisenburg, Singer, Barren and others. I am interested in presenting the clinical side of the subject as a caution against accepting the diagnosis of brain tumor as final when symptoms of headache, choked disk and vomiting are presented in the initial examination of the patient. The assumption that the case is a primary tumor of the brain is to be taken with reservations. We have made the practice of considering brain tumor as secondary until we can prove, as far as possible, that it is not, and that has been our clinical attitude and the one I wanted to emphasize as important for everybody. Another thing that I think is important from the standpoint of the neurologist is that one must not accept the diagnosis of an internist as final. When they see the patient presenting history and definite evidence of brain tumor, they are rather careless about their general examinations, as a rule, and we have made a practice of going over our patients to see that they have no tumor elsewhere, even though a negative examination is reported by the internist. I also want to emphasize the importance of routine examination of the lung by roentgen ray. The earlier it is made, the better for all purposes of value. It is valuable for immediate information, but it is equally and perhaps more valuable as a basis of comparison in further observation of the case, because if a patient develops a metastatic tumor in the brain, he is very likely to have also metastatic tumor in the lung. This may be negative on first examination, but in the course of a few weeks it may be revealed, and that, of course, is crucial. Some one asked about choked disk. I am not positive nor have I any definite information about the relative frequency of choked disk in secondary tumors. It comes with sufficient frequency to be very confusing. It is absent, true, in a number of cases, but that can be said of brain tumor whether primary or secondary.

RADON (RADIUM EMANATION) AS A PALLIATIVE AGENT IN THE TREATMENT OF INTRA-ORAL CANCER[*]

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AND
ROY EMMERT FLESHER, M.D.
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In intra-oral cancer, when should the primary lesion be submitted to surgery and when to irradiation? Evidently the operable lesions may be excised and the inoperable ones should receive irradiation. The greatest difference of opinion exists, however, as to what cases are really operable and what are inoperable. Judd and New[1] of the Mayo Clinic rightly state that the statistics of the operative treatment of intra-oral cancer will depend largely on what one considers operable and inoperable. Some take the position that in dealing with the primary lesion in intra-oral cancer, surgery has no place at all. Others take a diametrically opposite view and believe that only in the hopelessly advanced cases should irradiation be done, and that in all other cases operation should be performed. Our position is that distinctly operable cases may receive the benefits of surgery, and all other cases should be treated with radon.

What are operable lesions? Those that are small, well localized, easily accessible and do not involve any important anatomic structure. What are inoperable lesions? Large, ill defined and inaccessible lesions, such as those involving the base of the tongue, the pharynx, the palate and the tonsil.

METHOD OF TREATMENT WITH RADON

Radon is a gas and is extracted from an aqueous solution of radium chloride by a special apparatus. At least 1.5 Gm. of radium element should be contained in the solution used for this purpose. The rays that are emitted by a tube of radon are identical with those that are given off by a tube containing radium. Differing from radium, however, radon quickly decays, losing 16 per cent of its power every twenty-four hours. Some of the advantages of radon over radium itself are:

1. A large dose (1,000 or more mc.) can be concentrated over a small lesion. This is of the greatest practical importance because it allows one to shorten the time of exposure. A short exposure with a large quantity of radon is essential to success.
2. Bare glass tubes containing radon may be introduced directly into tumor tissue. In certain cases, this procedure is of great value and may even be necessary for success, as in tongue cancer.
3. If a radon tube is lost it is not a calamity, as it has little or no intrinsic value

TECHNIC

Our technic in the last seven years has naturally varied somewhat from time to time. Our usual technic is as follows:

If we decide to use surface irradiation alone, approximately 1,000 mc. screened with 2 mm. of silver and 2 mm. of rubber is applied to an area of from 4 to 6 sq. cm. for fifteen minutes. Great care must be taken not to rub or traumatize the lesion. Sometimes a lesion is of such irregular contour that several applications must be made in order effectively to irradiate the area. In such cases, regard must be paid to the overlapping of the irradiations.

If we decide that the patient should also have intratumoral treatment, we first apply a preliminary surface irradiation with 1,000 mc. in order to minimize the danger of metastasis. We regard this procedure as very important. Under local anesthesia, we then implant bare glass tubes, each containing from 0.5 to 1 mc. of radon, 1 cm. apart evenly throughout the lesion. These are allowed to remain in the tissues. The tubes either become encysted or slough out in the course of the healing process. A small piece of tissue for microscopic examination is taken with a small, sharp punch immediately after the first powerful irradiation.

Protection of the Operator.—Those who handle daily large quantities of radium may suffer from local and from constitutional effects. To guard against local effects on the fingers, nurses always handle radon tubes with rubber covered forceps 12 inches (30 cm.) long. To guard against constitutional effects we have devised movable lead angle plates, each weighing about 300 pounds (136 Kg.), behind which the head of the patient is placed while the nurse is making the application.

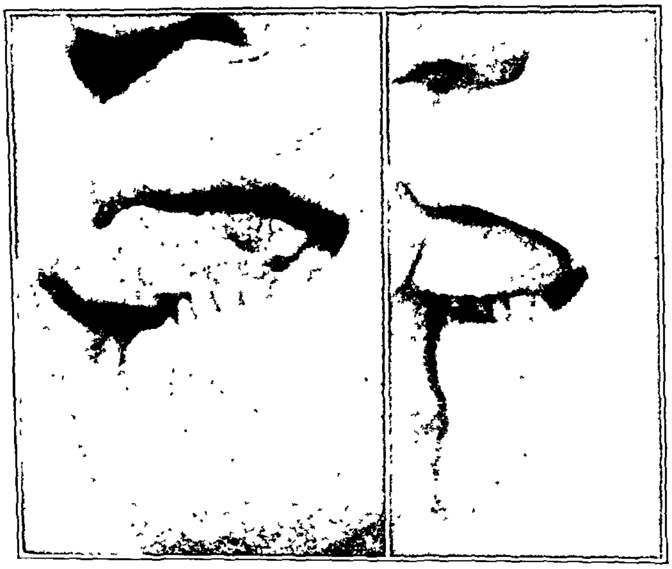

Fig. 1.—Epithelioma of tongue, before and after treatment.

The danger point in intra-oral cancer lies most frequently in the lymphatic glands of the neck. In the irradiation treatment of lymph nodes, blocks of soft wood, which may measure 4 by 4 by 4 cm., are used as radon carriers. One of these blocks is strapped to the skin, and a flat metal box, which may hold from twenty to fifty or more tubes of radon, is applied to its superior surface. At a distance of 4 cm., 1,000 mc. may be applied for seven hours. For the protection of the patient, we use a heavy movable lead shield which fits around the wooden block carrying the radon and is suspended above the table on which the patient lies.

REPORT OF TREATMENTS

Between Dec. 31, 1919, and Dec. 31, 1922, we used radon treatment in fifty-six unselected cases of intra-oral squamous cell cancer. None of the cases could be regarded as being favorable for operation. In each case, the clinical diagnosis was confirmed microscopically.

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[*] Read before the Section on Radiology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Judd, E. S., and New, G. B.: Carcinoma of the Tongue: General Principles Involved in Operation and Summary of Results Obtained at the Mayo Clinic, Surg. Gynec. Obst. **36**: 163 (Feb.) 1923.

Age and Sex.—The ages ranged from 29 to 71, the average age being 58.7 years. There were fifty-two men and four women.

Duration of Disease.—The disease was said to have existed for periods of from one month to three years, the average duration being 5.3 months.

Site of the Lesion.—The location of the disease was as follows: tongue, nine cases; floor of mouth, three; buccal mucous membrane, seventeen; superior maxilla, eight; inferior maxilla, seven and palate and tonsil, twelve. Cancer of the lip and cancer of the bone are not included in this report.

Lymphatic Involvement.—In twenty-nine cases there were palpable lymph nodes in the neck. In twenty-three cases, the submaxillary nodes and in four cases the cervical nodes were apparently affected. One patient had palpable submaxillary and submental nodes. In one case, there were palpable submental and cervical nodes. In twenty-seven cases, no definite nodes could be detected.

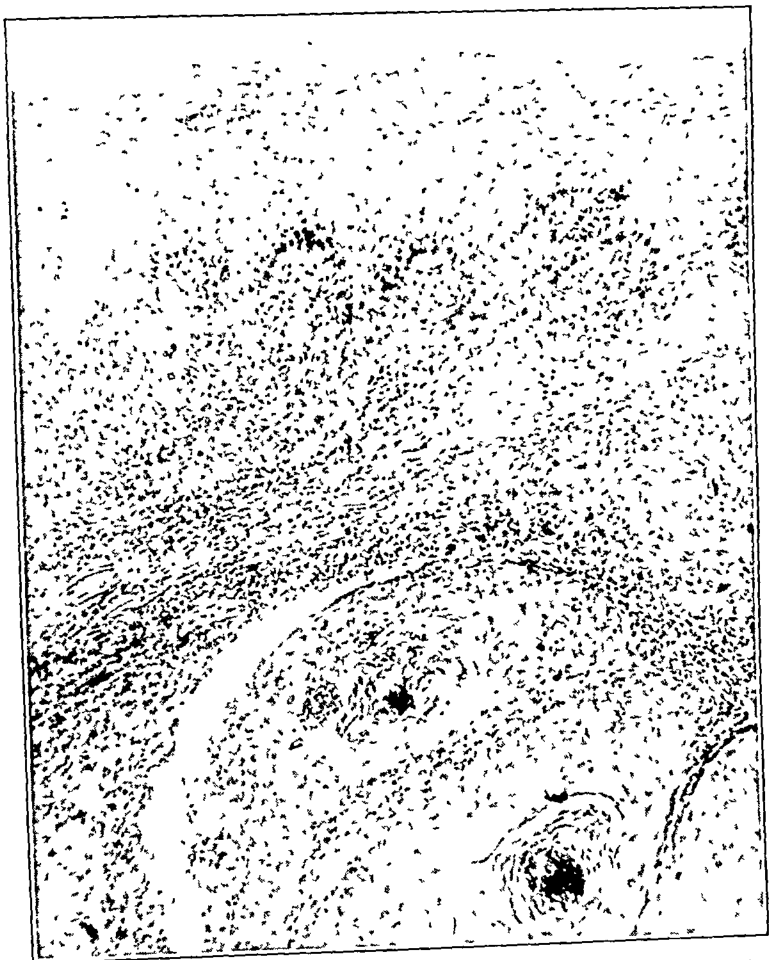

Fig 2.—Section from patient in figure 1, slightly reduced from a photomicrograph with a magnification of 95 diameters.

Results.—Thirty-nine of the fifty-six cases have been carefully traced. Of these, twenty-one patients had definitely palpable lymph nodes at the time of treatment. In eighteen cases no nodes were found.

Patients with Nodes.—Of the twenty-one patients with nodes, two are living, one having been well for over five years and the other for over four years. Of the nineteen patients with nodes who have died, the majority were improved for a time. The duration of life after treatment varied from four months to three years, the average duration being 16.4 months.

Patients Without Nodes.—Of the eighteen patients without nodes, fourteen, or 77.8 per cent, are living; four have been well for more than five years; five for more than four years; five for more than three years. Four patients are dead. One of these lived for twenty months. Three lived for more than three years after treatment, but all died eventually of recurrence of the disease.

Results in Cancer of the Tongue.—Of the nine patients with tongue cancer, six had palpable nodes in the neck. Two of these are living. Of the three patients without nodes, two are living. The four living patients with tongue cancer have been well for five years; four years; three and one-half years and three years, respectively. Of the five patients who died, two were free of cancer at the time of their death, one having been well for more than four and one-half years, and the other for more than one and one-half years. Three patients received only temporary benefit.

General Results.—Assuming that the seventeen untraced patients are dead, the total mortality among fifty-six unselected patients is thirty-six, or 63.3 per cent.

Twenty patients, 35.7 per cent, have been well for periods of from three to five years, the average duration of freedom from symptoms of cancer being three years and nine months.

59 East Madison Street.

ABSTRACT OF DISCUSSION

Dr. Francis Carter Wood, New York: This paper illustrates two points: one, what we ought to have, and one, what we ought not to have. We ought to have, and would be glad to have, a record of results, and, I think, these results are extremely good. But I should like to have, in addition, much more detail concerning the cases. If the question is going to be definitely worked out as to exactly what form of treatment shall in the future be applied to tumors, we shall have to know a great deal about the clinical history, the site of the tumor, its microscopic morphology, and whether the lymph nodes are involved or not. If we can determine by any means that there is a type of cancer of the tongue which is local, fairly benign, and does not metastasize to the nodes of the neck, that type belongs to the radiologists. The types, however, that metastasize easily, if operable, belong to the surgeons. If borderline, they should be treated by radium needles in the tongue and by prompt excision of the complete lymphatic system of the neck. It is wrong to leave these patients without such neck dissection, because by the time the nodes become palpable the patient usually is inoperable. Nothing has been gained by curing the primary tumor. It has seemed to me that there are many times when the nodes should be removed first before cancer of the tongue or cheek is treated with radium. For if the radium treatment is done first, the patient gets temporary relief or a complete disappearance of the tumor and then refuses further treatment

Dr. Albert Soiland, Los Angeles: We must first learn the type of cancer we are dealing with before we can intelligently apply the radiation. The new opportunity we have to use is the gold and platinum radon implants, but it is as yet an untried experiment. That is to say, it has not been used long enough for us to evalute its possibilities. This offers a compromise between the bare emanation needles and the method of Professor Regaud with highly filtered radiation

Dr. Sanford Withers, Denver: Aside from the pathologic features that have been mentioned by Dr. Wood and Dr. Soiland, I want to call attention to some further methods of the application of radium in cases of intra-oral cancer. The statement was made that in order to treat these types of growths successfully one should have in the neighborhood of 1 5 Gm. of radium and use large amounts of this agent for a short period of time; and yet I suppose that the best results that have heretofore been reported on the treatment of intra-oral cancer were those of Regaud, who had somewhere in the neighborhood of 40 per cent of carcinomas treated that were well over five years. At any rate, Dr. Regaud uses well filtered radiation equivalent to at least 0.5 mm. of platinum, which filters out almost all beta radiation, and instead of using radium implants over a short period of time he uses it over a period of from one to two weeks in small needles, containing from 1 mg. up to 6 mg. I believe that the use of smaller radiating foci, such as are used by Regaud, is a definite contribution to radiology in this country from this investigator's work. For the last two or three years I have been using from 3 to 5 mg. needles of radium element, encased in platinum-iridium from 0.2 to 0.5 mm. thick, and have been carrying out treatment over at least a period of a week. I think the results are better in doing this.

Dr. J. M. Martin, Dallas, Texas: In the treatment of oral malignancy, my experience has been confined almost altogether to the use of electrothermic coagulation.

Dr. Roy E. Flesher, Chicago: We agree with Dr. Wood that the result of radium treatment of intra-oral cancer will depend a great deal on the type of tumor, but it also depends on how much radium one has and how one uses it. Certain tumors are more malignant than others. Some are relatively benign, and in some one does very little for the patient. The same is true of the lymph nodes. The results in intra-oral cancer will depend a great deal on the lymphatic involvement. When squamous cell cancer metastasizes to the lymph nodes of the neck, the chances of the patient's getting well are limited. This is especially true if more than one group of glands is affected, or if the malignancy has broken through the capsule of the lymph gland. For patients in this condition the outlook is practically hopeless whether surgery is resorted to or radium alone is used, although life may be prolonged.

FLUOROSCOPIC VISUALIZATION OF TUBAL PERISTALSIS IN WOMEN

UTEROTUBAL ROENTGENOGRAPHY WITH LIPIODOL

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NEW YORK

Tubal peristalsis in women, in spite of abundant opportunity for observation, has so far not been observed or described as occurring during laparotomy. This physiologic function of the fallopian tubes has been assumed by embryologists and physiologists to be a necessary factor in the transportation of the ovum. Recent work on animals and on the extirpated and surviving uterus and tubes has actually established the phenomenon of tubal peristalsis. The experiments of Keye,[1] of Corner and his associates [2] Seckinger [3] and Snyder,[4] and of Sun,[5] Lee [6] and Hartman [7] of the Carnegie Embryological Institute of Washington, D. C., have demonstrated rhythmic contractions of the oviducts in the commonly employed experimental animals. Corner has shown the same to be true of the extirpated but surviving tubes of monkeys and of the human species. The results were corroborated more recently by Rudolph Kok,[8] von Mikulicz-Radecki [9] and Dyroff.[10] The latter author injected lipiodol into the uterus of a patient to test the patency of the tubes. The lipiodol entered the peritoneal cavity, in which it was diffused between coils of intestines. But the fluid remaining within the tubes cast shadows on the film, which he described as "pearls" of unequal length separated by constriction points. He concluded from the appearance of these pearls that they were due to tubal peristalsis.

The reason that tubal contractions have not been observed hitherto is briefly summarized by Dyroff as follows: "General anesthesia tends to paralyze muscular movements of the tubes, the same effect being noted on the intestines. Spinal analgesia and local analgesia appear to have the same influence. Tubal contractions are dependent on ovarian activity and vary with the particular phase of the menstruation; therefore, unless special observation is made at favorable times, the motions of the tubes may be overlooked. These motions are slow at best and in women they are slower than in females of the lower animals." To these factors, said to be responsible for the failure to observe peristalsis of the tubes during laparotomy, may be added section of the abdominal wall with exposure of the viscera. This in itself may be an important factor in inhibiting tubal motions. Peripheral nerve blocking, as in local anesthesia of the abdominal wall, may reflexly influence the visceral innervation, but tubal contractions appear not to be entirely dependent on nervous stimulation, as they continue for some time when the extirpated organs are suspended in oxygenated Locke's solution.

Recently, Forestier has advocated the use of lipiodol —an iodized oil—in the roentgen-ray examination of various body cavities. It is extremely radiopaque and is very distinct even when overlapped by bone shadows. It was therefore used as the medium in our study of women with tubal obstruction as previously demonstrated by gas insufflation. Not only were roentgenograms taken of the tubes, but direct fluoroscopic observation enabled us to watch the fluid in the uterus and tubes. It was thus possible to note also whether peristalsis was present. The method would be analogous to the observation of gastro-intestinal movements and peristalsis under the fluoroscopic screen in the presence of roentgenographically opaque solutions.

PRELIMINARY STUDY

For the purpose of our preliminary study, we chose only those patients in whom peruterine tubal insufflation with carbon dioxide gas had demonstrated the fallopian tubes to be nonpatent or partially blocked. Twenty-six patients were observed at the office. Fluoroscopic observations were made during the lipiodol injection, and for several minutes after the uterine cavity and tubal lumina were filled by this fluid. Films were taken at the same time, half an hour later, again the next day and at various periods thereafter for several weeks in order to note how long the lipiodol remained in the tubes or in the peritoneal cavity. With the exception of two cases, 5 cc. of the fluid was sufficient to fill the uterine cavity and the tubes to full length. In two cases the uterine cavity held more than 5 cc., and the quantity used was double.

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[1] Keye, J. D.: Periodic Variations in Spontaneous Contractions of Uterine Muscle, in Relation to the Oestrus Cycle and Early Pregnancy, Bull. Johns Hopkins Hosp. **34**: 60 (Feb.) 1923.

[2] Corner, G. W., and Seckinger, D. L.: Cyclic Variations in the Spontaneous Contractions of the Fallopian Tube of the Macasus Rhesus, Anat. Rec. **26**: 299-302.

[3] Seckinger, D. L.: Spontaneous Contractions of the Fallopian Tube of the Domestic Pig with Reference to the Oestrus Cycle, Bull. Johns Hopkins Hosp. **34**: 236-245 (July) 1923.

[4] Snyder, F. F., and Corner, G. W.: Observations on the Structure and Function of the Uterine Ciliated Epithelium in the Pig with Reference to Certain Clinical Hypotheses, Am. J. Obst. & Gynec. **3**: 358 (April) 1922.

[5] Sun, K. C.: Spontaneous Contractions of the Pregnant Human Uterus, Bull. Johns Hopkins Hosp. **36**: 280 (April) 1925.

[6] Lee, F. C.: Preliminary Note on the Physiology of the Uterine Opening of the Fallopian Tube, Proc. Soc. Exper. Biol. & Med. **22**: 335-336, 1925.

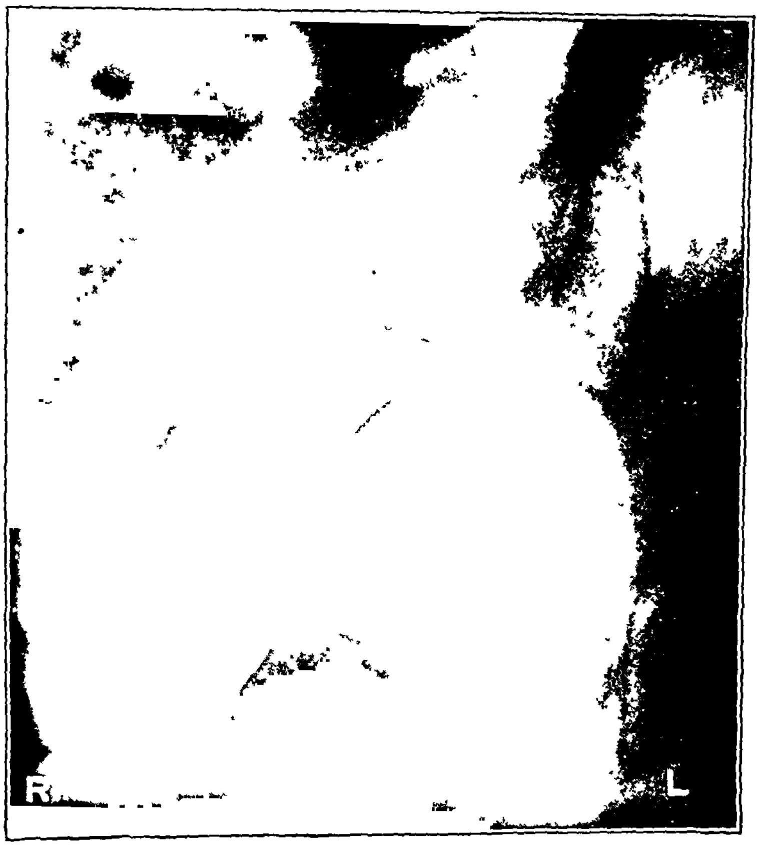
[7] Hartman, Carl: Observations on the Motility of the Opossum's Genital Tract and Vaginal Plug, Anat. Rec. **27**, May 25.

[8] Kok, Rudolph: Arch. f. Geburtsh. u. Gynäk., February, 1926.

[9] Von Mikulicz-Radecki, F.: Zentralbl. f. Gynäk. **49**: 2322 (Oct. 17) 1925.

[10] Dyroff, Rudolf: Zur Frage der Tubenperistaltik, Zentralbl. f. Gynäk. **49**: 1890 (Aug. 22) 1925.

The results of the examination in the first two of the twenty-six cases were not clear, but they were useful in indicating points in technic to which special attention had to be paid in subsequent cases. The present report is based on data obtained in the remaining twenty-four cases. Of these, seven were blocked close to the uterine wall. In seventeen cases, one or both tubes were visualized. Fifteen of these showed peristalsis which could actually be watched under the fluoroscope and evidence obtained on the films by the distinct beading which Dyroff described as "pearls."



Appearance of lipiodol in the uterine cavity and in both tubes and beading due to peristalsis in the right tube.

Roentgenologically it is the lumen of the tube that is visualized. This can be divided into two portions—the first, a fine, hairlike process extending from the uterine cavity a distance varying from 1 to 3 inches (2.5 to 7.6 cm.). Its course is usually downward and outward and is fairly straight. The second portion is tortuous and more or less dilated, corresponding to the ampulla, which varies in length from 1 to 4 inches (2.5 to 10 cm.). The first portion does not show any peristalsis. It can be seen with careful fluoroscopy; it empties and fills, but no rhythmic action can be seen. It is in the second portion, the one corresponding to the ampulla, that motion can best be studied. Three types of motion are encountered: 1. The passage of lipiodol through the tubes as a result of pressure exerted by the injecting syringe transmitted through the uterine cavity into the tubes. This movement is slow, somewhat irregular, and goes from uterus to fimbria. 2. A wormlike twisting or writhing action of the tube. This may be due either to a contraction of longitudinal muscle fibers alone or in conjunction with a movement transmitted from adjacent viscera. 3. A true peristalsis, showing as a distinct beading, which travels in a wavelike motion (similar to gastric peristalsis), starting at the fimbria and progressing toward the uterine cavity. It occurred at a rate, varying in different subjects from approximately five to nine a minute. It could not be seen in all subjects and was seldom seen as soon as the tube showed dilatation. Whether this rate is normal or whether it is a response to a foreign material (lipiodol) in the tube is impossible to state, but it proves that the tube is capable of a rhythmic regular peristalsis extending toward the uterine cavity. The peristaltic waves were counted by the aid of a stop watch with a fluorescent dial and are therefore only approximately exact.

COMMENT

Further study may yield data on normal physiologic tubal contractions similar to those obtained by gastro-intestinal roentgenography. For this purpose, however, lipiodol injection in the presence of normally patent tubes would be necessary. Forsdike, Mocquot, Forestier and others who have used it for diagnostic purposes state that it is followed by no untoward sequelae. We have seen no complications arise in the cases in which the tubes were completely blocked. The lipiodol has been either removed by aspiration, or the little that remained in the uterine cavity was found to escape almost immediately after the cannula was removed. In the tubes the lipiodol may remain a fairly long time if the obstruction at any point is complete or only partial. This is especially true when cystic dilatation of the tubes is present. In a few of our cases, the lipiodol was seen lodged in the tubes several months after the injection, but no symptoms referable to its presence were noted.

In those cases, however, in which the lipiodol has escaped into the peritoneal cavity immediately following the injection into the uterus or sometime afterward, it is possible that peritoneal irritation may result. We[11] recall the experience with intra-uterine colloidal silver (collargol) injection in the presence of patent tubes, in which an appreciable amount of peritoneal irritation was seen, and it is not impossible that under similar conditions the same results may follow the injection of lipiodol. In one of our three patients with partially patent tubes, lower abdominal cramps were complained of at least twelve hours after the lipiodol injection. There was no febrile reaction, and the patient was able to appear on the following day for a control roentgen-ray examination. It would be well, therefore, never to inject lipiodol into the uterus without first proving by peruterine carbon dioxide gas insufflation that the fallopian tubes are definitely nonpatent.

261 Central Park West—345 West Eighty-Sixth Street.

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[11] Rubin, I. C.: X-Ray Diagnosis in Gynecology with the Aid of Intra-Uterine Collargol Injection, Surg. Gynec. Obst., April, 1915, pp. 435-443.

Pernicious Anemia and Syphilis.—It is not rare to find the serologic evidence of syphilitic infection in the presence of pernicious anemia. . . . Whether or not there is any causal relation between the two is always a pertinent but almost unanswerable question. Syphilis may be so protean in its manifestations as to present almost any group of symptoms; and it is particularly stated in the writings on this subject that it may in fact cause an anemia of the pernicious type. When this occurs, however, it is relatively early in the course of the infection and not associated with the late manifestations, such as tabes. It is the experience of this clinic that pernicious anemia associated with late syphilis is not the result of the syphilis, but is a separate disease; and antisyphilitic treatment, even though of some benefit to the undoubted syphilitic changes, has no effect on the anemia.—Stern, L. D., *Ann. Clin. Med.*, June, 1926.

Clinical Notes, Suggestions and New Instruments

ORTHOPEDIC APPLIANCE FOR ANKYLOSIS OF ELBOW JOINT

PATRICK P. GROSSO, M D, CHICAGO
Passed Assistant Surgeon (R), U. S. Public Health Service

We are not always in a position to spend patients' money freely for orthopedic appliances; besides, brace makers are not always handy especially for the country practitioner, and therefore we are sometimes called on to use a little ingenuity and devise a simple apparatus which can be readily made at home.

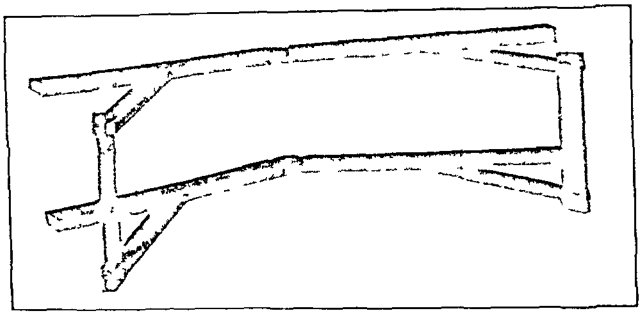


Fig 1 —Top view

The appliance described here pertains to the reduction of incomplete ankylosis of the elbow joint. It is simple to construct, easy to apply, and the results obtained by its use are exceedingly satisfactory.

The principle involved can be used with success in any of the hinged joints. It is that of constant, gradual increasing force in the desired direction. I have used these principles with good results in many cases, even though the hospital had an up-to-date physiotherapy department.

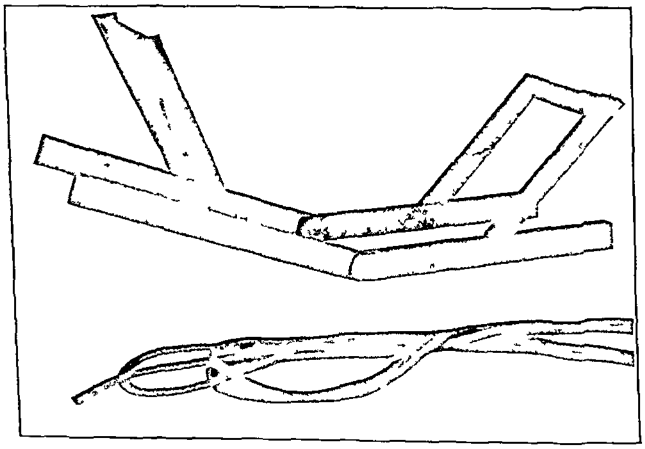


Fig. 2 —Lateral view.

The appliance consists of four rigid pieces of wood about one-fourth inch thick, three-fourths inch wide, and about 8 inches long One hole is drilled on each piece, 1 inch from the end. The flat surfaces of the ends with the drilled holes are brought together and held in place by means of a machine bolt forming two strips of wood hinged in the center; these correspond to the length of the entire arm and are placed parallel and about one-half inch farther apart than the width of the arm; two rigid upright pieces of wood about 6 inches in length and of the same breadth and width of the other pieces are fastened at an angle of about 30 degrees on the outer surfaces of the strips, in an upright position and about 5 inches from the hinged joints; a cross piece of wood is nailed over the upper ends of the upright to reinforce and serve as handles for the attachment of the rubber elastic tube which will create the constant, gradual tension.

The splint is applied by first putting on two fairly firm well padded plaster-of-paris casts, one on the upper arm to about 1 inch above the elbow joint, and the other on the forearm including the wrist joint and to about 1½ inches below the elbow. The appliance is then placed in position so that the hinges are in line with the center of the articulating surfaces of the elbow, with the hinge jointed pieces of wood parallel, one on the outer side of the arm and the other on the inner side. The appliance is then fastened to the underlying plaster casts by means of several plaster-of-paris bandages, completely incorporating the parallel strips, leaving exposed only the hinged joints and about 2½ inches of the elbow so it can be free to move.

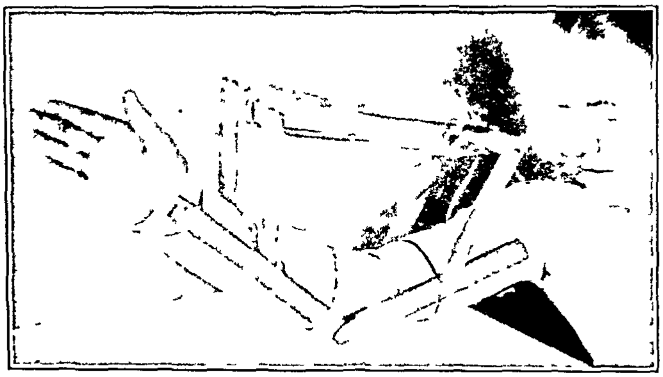


Fig. 3.—Splint in position over plaster cast.

After the plaster has dried about sixteen hours, the elbow is put on tension for flexion by passing about three turns of an elastic rubber tubing, one-fourth inch caliber, around the cross pieces of the uprights; the tension can be increased by pulling taut the rubber tube. The patient is instructed to increase the pull if he can resist more, or loosen it if it is causing discomfort.

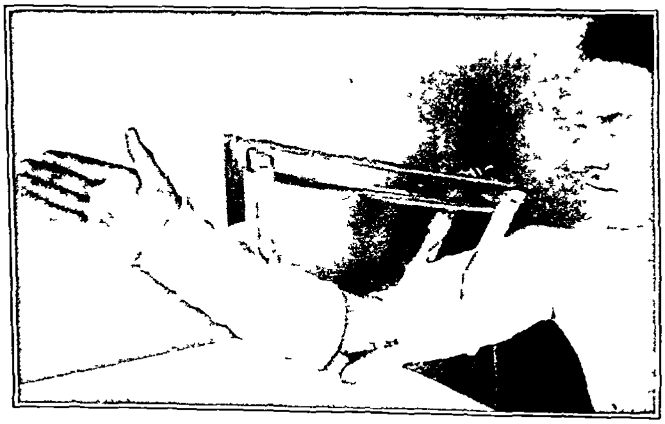


Fig 4 —Splint fastened to underlying cast with plaster bandages.

After the appliance is once put on, all that is required is to loosen the rubber tubing daily for a few minutes and extend the arm—this can also be done by the patient.

The advantageous features are: 1. The appliance is very simple and does not require any mechanical ability or elaborate tools and material to construct. 2. The tension is constant, and therefore is a time saver because it takes advantage of working day and night with the periods of muscular relaxation and fatigue. 3. The pressure exerted by the tension of the rubber tube is distributed equally over a large area, thereby eliminating pressure sores. 4. The patient will not require a masseur, therefore being relieved from pain as a result of forcible flexion. 5. It takes the place of complicated mechanical devices and gives quicker results.

4141 Clarendon Avenue.

NEW MALE GENITO-URINARY BASIN

William W. Goldnamer, M.D., Oakland, Calif.

The design and shape of this basin are new; it is especially made to fit the male interthigh position. This is quite important, because this position in a male is a triangle with the base at the knees; in other words, the narrowed pelvis and the relative position of the heads of the femur in a male demand a quite different shape for this kind of basin than were it used for a female.

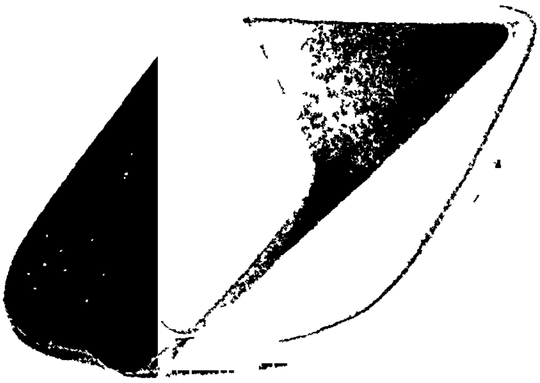


Fig. 1.—Male genito-urinary basin: front and top view.

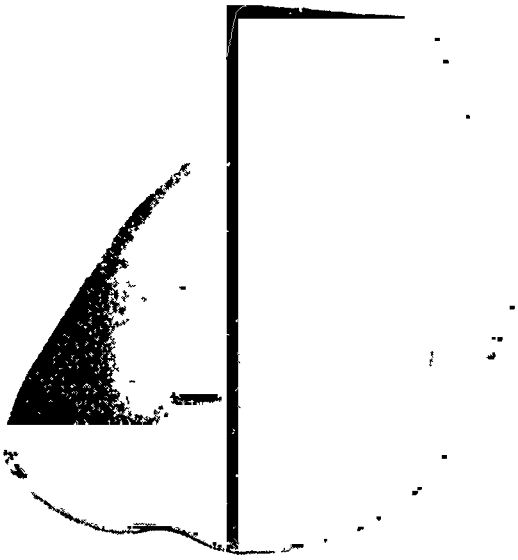


Fig. 2.—Basin as seen from rear and bottom.

Another new point in this basin, and an obvious advantage, is that the splash, at any angle, is toward the floor of the basin.

SALIENT FEATURES OF BASIN

The material is the finest technical porcelain and quite strong, fully glazed and will not stain or discolor. Being 11 by 8½ by 5 inches, it is large and roomy, with a capacity of more than a quart. There are no angles or corners that cannot be cleaned easily.

The weight is 4 pounds, 9½ ounces, about 6 pounds packed; I shall be able to supply these through the regular retail surgical supply houses. The salient points are that it fits the anatomic contours, has a protection for the patient's clothing, and seems practical.

Fig. 3.—Basin as used in sitting position.

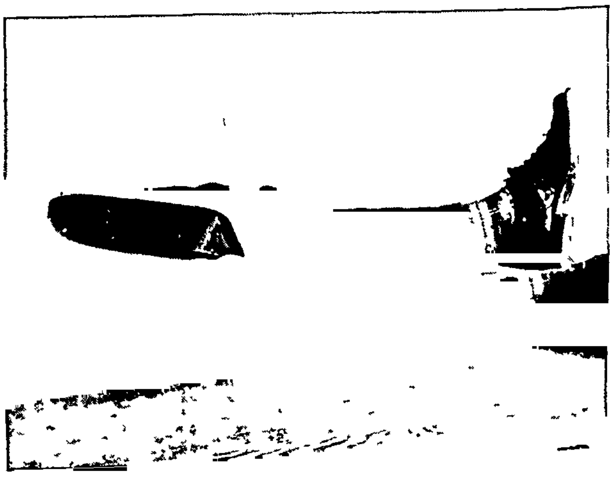


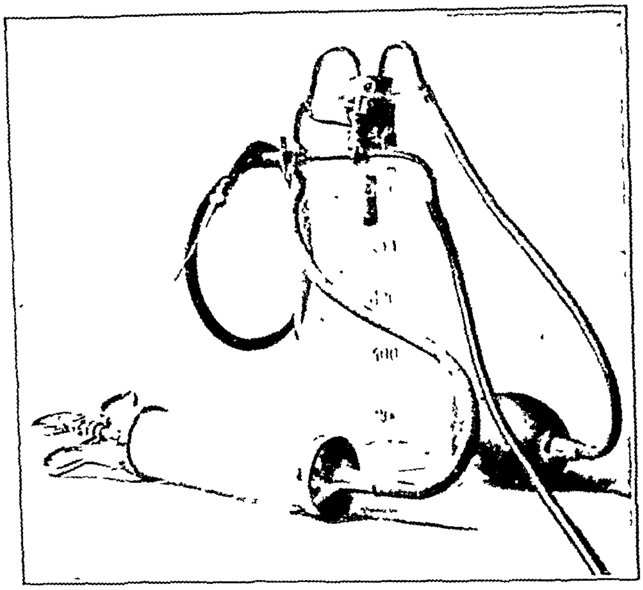
Fig. 4.—Basin as used in recumbent position.

577 Fourteenth Street.

A PRACTICAL APPARATUS FOR ASPIRATING AND WASHING THE PLEURA

A. J. de Martini, M.D., and Robert S. Wynn, M.D.,
Genoa, Italy

This apparatus works on the principle of withdrawing the purulent exudate, at the same time introducing into the pleura a mild antiseptic solution, following which air can be substituted. It consists of a graduated bottle containing 1,000 cc., and a cork with two openings into which pass two metal tubes. The right tube is connected to a rubber bulb. The left tube is connected to an especially constructed cock with four openings. The upper opening of the cock connects by a metal tube to the inside of the bottle; the left opening is connected to a pleura needle. The lower opening is connected by a rubber tube to a 100 cc. glass syringe. The right opening is a metal tube with a two way cock so that when the cock is open, fluid can be forced from the pleura to a receiving vessel outside; or, if the cock is closed, there is a small filter through which air is sucked by a syringe and forced into the pleura.



De Martini apparatus for aspirating and washing the pleura

This specially constructed cock allows the passage of a simultaneous double current, which is controlled by a handle so that when the handle is turned horizontally, fluid is sucked from the pleura into a syringe. When the handle is turned perpendicularly, fluid is forced from the syringe into a receiving vessel; at the same time, the solution in the bottle is forced into the pleura. This apparatus has been used in cases of empyema to aspirate the pus and wash the pleura until the solution returns clear. Then sufficient air is forced into the pleura to prevent adhesions forming.

A MODIFICATION OF BEER'S SUPRAPUBIC DRAINAGE CUP

James A. Gardner, M.D., Buffalo

After suprapubic cystotomy, various methods have been used to take care of drainage. If rubber drainage tubes are used, they will keep the patient more or less dry, but delay the healing. If absorbent pads and cotton are used, they practically form a urine poultice.

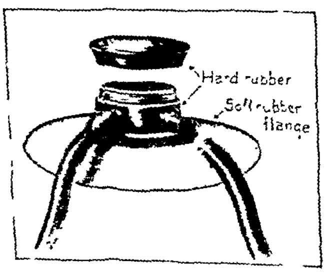


Fig 1.—Cup is made in three sections, the top and body of cup of hard rubber, the flange of soft rubber.

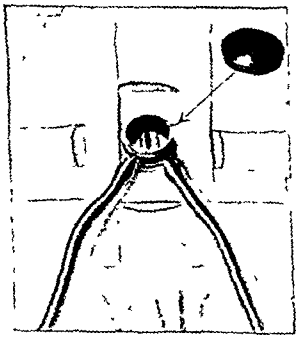


Fig. 2.—Drainage cup in place.

Some years ago, Dr. Edwin Beer brought out a suprapubic cup made of hard rubber, which is attached to the abdomen by an adhesive plaster mass supplied by Johnson & Johnson. This cup seemed to provide a most satisfactory and economic method of caring for the drainage in these cases. It was found, however, that the hard rubber flange of the Beer cup would not fit a certain type of abdomen. The cup has been modified by making the flange or skirt of soft rubber, and the outlets for the drainage tubes have been increased in caliber.

The adhesive mass is soluble in benzine. The evaporation of the benzine in the mixture can be hastened by heating. The mass should be of the consistency of tar when spread on the rubber flange. The cup is now ready to apply over the wound, and is reenforced by strips of adhesive plaster.

The skin should be dry before the cup is applied. This is one of the most important parts of the technic.

If a large catheter is placed in the suprapubic opening, or an indwelling catheter placed in the urethra for four or five hours, so that the adhesive mass has a chance to become thoroughly attached, the cup will keep the patient absolutely dry.

Following a prostatectomy, the cup should not be applied until the drainage is sufficiently clear so that the drainage tubes will not become plugged.

The drainage tubes are placed in a urinal between the patient's legs, or permitted to drain in a bottle when he is out of bed.

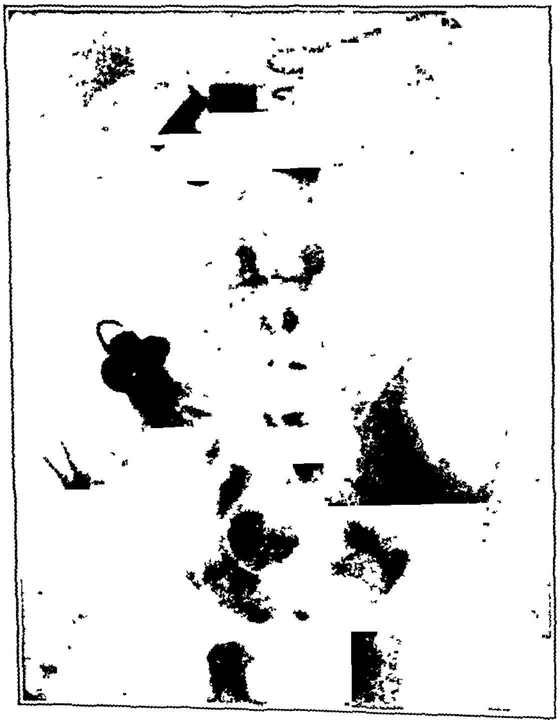
These cups may be procured from Charles R. Bard, 79 Madison Avenue, New York.

General Electric Building.

UNUSUAL FOREIGN BODIES IN THE GASTRO-INTESTINAL TRACT

Jacob Buckstein, M.D., New York
Consultant in Gastro-Eneterology, U. S. Veterans' Bureau; Associate Roentgenologist, Bellevue Hospital

A. M., calling himself "The Count with the Hidden Jewels," by which title he has become known, was accidentally noticed swallowing a tablespoon bent on itself. This led to an examination of the abdomen, with the result seen in the accompanying illustration.



Appearance of abdomen, showing various articles swallowed.

In the stomach were present a tablespoon bent on itself, a bed spring, several metal door fixtures and a part of a lock. In the ileocecal region, there was a spring of some sort. In the rectosigmoid area was a conglomeration of nondescript articles. At the end of seven days, the latter articles were evacuated. Those in the stomach and illeocecal region remained.

1 West Eighty-Fifth Street.

A PRACTICAL DRAINAGE TUBE FOR CLOSED DRAINAGE IN EMPYEMA

F. W. McGuire, M.D., Buffalo
Assistant Professor of Surgery, University of Buffalo Department of Medicine

Those who are concerned with closed drainage in the treatment of empyema should be interested in this simple, practical and inexpensive drainage tube.

Closed drainage is positively indicated in all cases of empyema in which adhesions have not formed between the parietal and visceral pleura. It is also indicated in those conditions in which the patient is extremely toxic, as this class of patients succumb very readily to even minor operating. It has a further advantage in that it eliminates dressings.

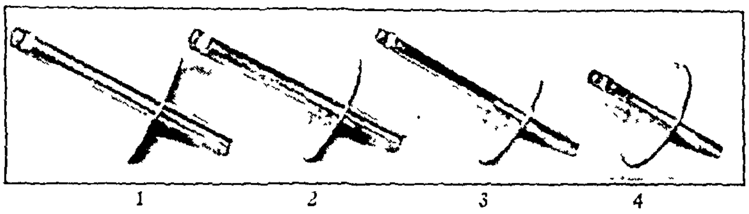


Fig. 1.—Tubes: 1, 3/8 by 2 inches; 2, 5/16 by 2 inches; 3, 1/4 by 2 inches; 4, 1/4 by 1 inch.

The use of the instrument is very simple. Local anesthesia is produced between the ribs selected. This point should be sufficiently high so as to prevent the tube from coming in contact with the diaphragm. A skin incision is made to allow the introduction of the point of a trocar. The trocar is plunged through the chest wall. The tube is inserted. If the tube touches the lung it should be withdrawn slightly and a rubber collar or gauze placed between the shoulder of the tube and the chest wall. A finger is held over the opening in the tube. A piece of gauze is placed between the shoulder of the tube and the chest wall. The tube is fastened to the chest wall by adhesive plaster. The drainage tube is connected with a rubber tubing as shown in the illustration. This tubing is connected with an air-tight bottle. On the distal glass tube of the bottle there is a one-way valve, to prevent the entrance of air. The tubes are made in different sizes, as any tube put through the chest wall will leak at the end of seven or eight days; a larger tube is then inserted which will prevent leakage for another week. I believe that this method of collecting the pus is better than having it run into water, as the amount of pus that escapes can be measured and its character determined. It is well at this point not to allow a too rapid escape of pus, as a sudden withdrawal of a large amount may have an embarrassing influence on account of its traction on the mediastinum. The patient is left alone for about twenty-four hours, when irrigation with 1:3 surgical solution of chlorinated soda is used at least twice in twenty-four hours. Under this manner of treatment, patients regain their strength quite rapidly; and if the tube is used early enough, a number of these patients will recover without further treatment.

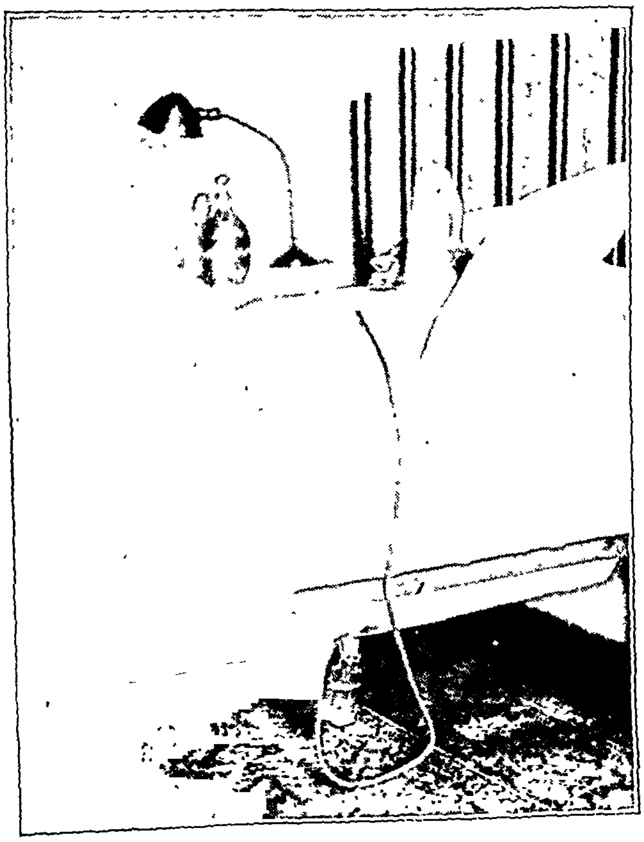
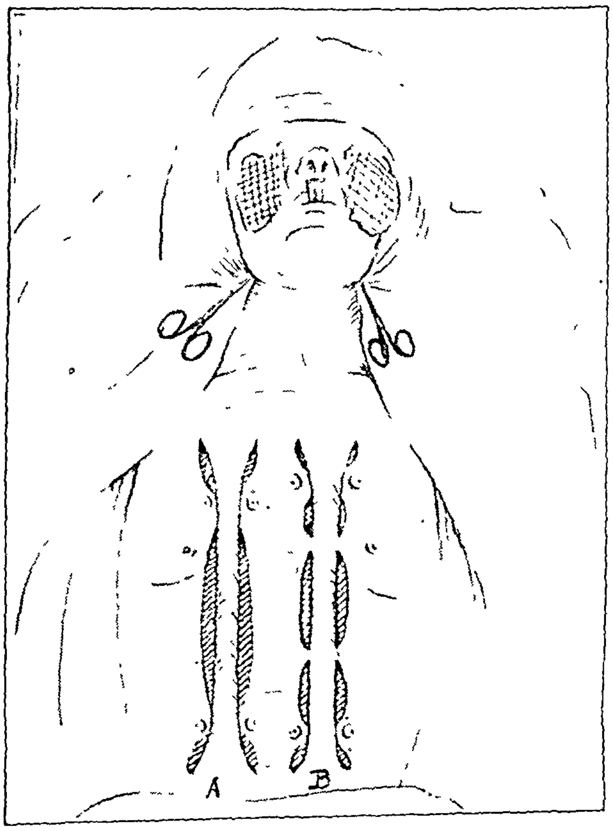


Fig. 2.—*Drainage tube in chest.*

THE JUMP METHOD OR INTERRUPTED TUBE FLAP: A NEW TECHNIC IN FASHIONING TUBE FLAPS FOR SKIN GRAFTS

J. Paul de River, M.D., San Francisco.

In fashioning tube flaps preliminary to transferring large skin grafts from distant regions, the paramount thing to be considered is the securing of a graft that has an abundant blood supply, so that the viability of the transplant may be assured.



A, old method; *B*, new, or jump, method.

This is best accomplished by outlining a large section of skin and then forming a tube by suturing the outer edges together at the under surface, thus leaving the skin surface outward. The tube is allowed to remain attached at the proximal and distal ends until its edges are well united and an adequate blood supply is established. This is accomplished in from ten days to two weeks. When good circulation is evident, the distal end with the graft attached is severed and swung into place, covering the area to be grafted.

This procedure is successful in a large measure, except when there is a scanty blood supply, as in tubes fashioned from the chest and abdomen, and when the length of the tube does not exceed 8 or 10 inches. In taking tubes of a greater length from these regions, the chance of failure increases in proportion to the length and breadth of the tube (*A*, in illustration).

That I may be reasonably assured of the vitality of the tube by giving it a sufficient blood supply, I have modified Gillies' method. In this way a more abundant blood supply is furnished the tube, and at the same time immobilizes it. This is of great importance in dealing with long tubes, because twisting throws tension on the proximal and distal ends and may result in the loss of the entire tube by necrosis. To overcome this I not only allow the proximal and distal ends to remain attached, but I use what I term "the jump method or interrupted tube flap" (*B*), which is as follows:

Two parallel incisions are made through the skin, superficial fascia and deep fascia, as in the ordinary tubing method, and carried for 3½ inches (9 cm.). Then there is a jump of one-fourth inch (5 mm.). The incision is continued for another 3½ inches and followed by another jump of a quarter of an inch. This method enables one to prepare tubes of indefinite length with a reasonable certainty of safety because of the nourishment furnished the tube from its lateral attachments as well as the proximal and distal ends. These lateral attachments also serve to hold the tube in place without the use of pressure dressings, and prevent their twisting. At the desired time the small laterally attached areas are cut and sutured with fine catgut. The proximal or distal end is detached and transferred to its new position.

369 Flood Building.

RECIPE FOR EPILATING WAX

William Allen Pusey, M.D., Chicago

Epilation by means of an epilating wax is in many cases as satisfactory a way as any of handling cosmetically objectionable hairs. These epilating waxes are made usually of beeswax and rosin. They are commercially obtainable, but at high price. Because of the price to patients, I suggested to my assistant Dr. Theodore Cornbleet that he experiment with various mixtures until he got a satisfactory wax.

A wax which is efficient for epilation, and which is in every way as satisfactory as commercial waxes, can be made of beeswax, one part by weight, and finely powdered rosin, four parts by weight. The wax is melted over a low fire and, after melting is complete, the powdered rosin is poured in. The heat is continued and the mass stirred gently until entirely melted; this requires from one to two minutes.

For use it then needs to be molded. It is the consistency of home-made candy and can be handled in the same way. One way is to pour it into a deep dish and then crisscross it with deep markings about three-fourths inch apart as though one were making caramels. The plate must be greased, say, with petrolatum, to prevent the wax sticking to it. After it is cooled the wax is fairly brittle and the blocks can be broken off for use. It can also readily be molded in sticks by taking heavy paper and making a hollow tube about five-eighths inch in diameter and 3 inches long, one end of which is closed off by being folded in. After the melted mixture has been poured, the tube is allowed to stand until the mass hardens. This takes only a few minutes. Heavy wax paper is the best for this purpose, but any wrapping paper can be used, provided it is greased on the inside to prevent sticking. Wax, 2 drachms (7.5 cc.) and rosin, 1 ounce (30 Gm.) make a workable stick; about two or three times as much should be used for making square blocks.

The method of removing hairs with the wax is as follows: A block, or the end of the stick, is melted by heating over a flame until it becomes soft; this can be done with a temperature that will not burn the skin. When softened, the melted wax is rubbed on the skin in the direction of the hair growth. It is well to press it down with the moistened end of the thumb, until one gets a layer about one-eighth inch thick. This is allowed to cool, or is chilled by the application of ice or cool water. After it is cooled, the edge of the wax is picked up with the nail and the wax pulled off with a quick pull in the opposite direction to the growth of the hairs. This is only slightly uncomfortable. If the application has been well made—and it is easy to learn to do this—few hairs will remain on the surface. Those that do remain had best be left for subsequent application, or removal with epilating forceps. The fragments of wax that stick to the skin can be picked off or easily dissolved with carbon tetrachloride.

My impression is that the temporary removal of superfluous hairs with an epilating wax is the most practical way of handling many cases. The prolonged, careful experiments of Trotter[1] would seem to indicate that the temporary removal of hairs, no matter what the method, has no effect in stimulating their growth. Schwenter-Trachler[2] of Berne believes that the removal of hairs by abrasives, such as pumice, makes the growth less vigorous. I am not able to see the validity of the grounds for this belief, but there seem grounds for hoping that the mechanical epilation of the entire hairs may have some effect in interfering with growth. The mechanical removal causes some traumatism of the hair follicle which must be followed by slight inflammatory reaction. It is possible that the prolonged repetition of this inflammatory reaction might, in time, produce sufficient sclerosis around the follicles to cause shrinking of them. Certainly, I see no reason to believe that there is any objection to the temporary epilation of superfluous hairs.

7 West Madison Street.

SPONTANEOUS RUPTURE OF THE EXTENSOR POLLICIS LONGUS

C. K. Barnes, M.D., Chicago

This case is being reported because only two other cases have been reported in the last ten years.

REPORT OF CASE

In January, 1926, C. D., a man, aged 35, while carrying a board, suddenly noticed that he could not move his left thumb, although he did not feel pain.

On the same day, when he entered the Auburn Park Hospital, pain, tenderness and evidence of injury to the hand or wrist were absent. The patient was given instructions to bathe the hand in warm water and to return the following day.

My examination the following morning revealed that the patient could not extend the thumb. Flexion was normal. There was neither pain, tenderness nor anesthesia. After some manipulation I was able to push the distal end of the tendon of the extensor pollicis longus down into the lower part of the tendon sheath, and the diagnosis of a ruptured extensor tendon was established.

Under local anesthesia, the unevenly torn ends of the tendon were sutured with silk, and the tendon sheath closed. The thumb was splinted for five days, after which passive motion and massage were employed. The patient returned to work in six weeks, without loss of function of the thumb.

COMMENT

Except for the rupture the tendon had appeared normal. Whether or not the zero temperature at the time favored its rupture, I am at a loss to know.

Auburn Park Hospital.

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1. Trotter, Mildred: The Resistance of Hair to Certain Supposed Growth Stimulants, Arch. Dermat. & Syph. 7:93 (Jan.) 1923.
2. Schwenter-Trachler: Arch. f. Dermat. u. Syph. 111:69, 1912.

Spartan Life Not for the Individual.—On the whole, he taught his citizens to think nothing more disagreeable than to live by (or for) themselves. Like bees, they acted with one impulse for the public good, and always assembled about their prince. They were possessed with a thirst of honor, an enthusiasm bordering on insanity, and had not a wish but for their country. These sentiments are confirmed by some of their aphorisms. When Paedaretus lost his election for one of the three hundred, he went away rejoicing that there were three hundred better men than himself found in the city. Pisistratidas, going, with some others, ambassador to the king of Persia's lieutenants, was asked whether they came with a public commission, or on their own account, to which he answered, "If successful, for the public; if unsuccessful, for ourselves."—Monroe: Source Book of the History of Education, p. 22.

Special Articles

HEREDITY OF DISEASE *

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In discussing so extensive and somewhat vague a topic as heredity of disease it is necessary, first of all, to define terms. It is obvious, in view of the diversity of attitude of medical men toward heredity, that there is a corresponding diversity of connotations connected with the word. In the present article, I will use heredity as covering the internal factors that direct development. This is not to say that there are any internal factors which, alone of themselves, determine the course of development but that internal factors play a very important rôle, such that through them are determined the specific form and most of the details of development, given an adequate and appropriate environment in which the development can take place.

The end-result of development is the reaction between the internal factors and the external factors. The internal factors may be called the genotype and the end-result may be spoken of as the phenotype. The phenotypical characters are determined both by genotypical impulses and by environmental, or paratypical, conditions. It is often difficult to say how much of the phenotypical result is due to the internal genotypical and the external, paratypical, influences.

Disease may be considered as any deviation from normal in development, in form or in functioning of the phenotype.

In considering heredity of disease, the biologist may properly insist on the universality of the broad principles of heredity and of disease in all organisms. It helps, in considering the topic "heredity in relation to disease," to take the broadest possible view over the field of organisms. This comparative view will help us to distinguish between the essentials and the incidentals of the phenomenon.

It is clear that the course of development is tremendously influenced by internal factors. Otherwise we should not have the egg of a starfish and the egg of a sea urchin, lying in the same finger bowl, develop in entirely different directions, after the first cleavage steps have been passed through. In one and the same species the course of development is not always the same. In man we have in different parts of the earth, and even in the same great city, negroes who develop long appendages, and Chinese who develop short appendages; persons with wooly hair and those with straight; persons with high, narrow noses and those with low, flat noses; persons with long heads, and those with short. A textbook of embryology which goes into detail would not be equally applicable to the negro race and the white race because the course of development is different in these races, even though the respresentatives of them whose development we are considering may be brought up under environmental conditions as alike as possible. We find, indeed, that even in the white or European race there are developmental differences in different strains, as, for instance, the short-legged Mediterraneans and the long-legged Scotch, the heavily pigmented Italians and the slightly pigmented Scandinavians. For parents who both belong to the pure south Italian strain it is as much of an abnormality to have a blue-eyed child as for typical Swedes to have a black-eyed child. A condition that is normal for one race may be abnormal for another race, depending on the internal or hereditary impulses of the race.

Different internal developmental impulses may be found, indeed, in different members of the same family, so that some of the children may be short while others are tall, some slender while others are obese, some blue-eyed while others are brown-eyed. This difference in developmental impulses is different in the germ cells of the parents who are themselves of hybrid origin.

While variations in pigmentation, in form and in size are so common in our population that we hardly think of the variations as abnormal, there are, on the other hand, extreme conditions that we speak of as abnormal, although their development is determined by the same sort of laws as those that control the development of the more normal variants. For example, we have strains of persons in whom the brown pigment is entirely lacking, called albinos. In them the impulse to the production of brown pigment is as much weaker than in the typical Swede as in the typical Swede it is weaker than in the Mediterranean. The method of inheritance of albinism is very simple; namely, there is a genotypical lack of the enzyme that produces brown pigment. *If this is genotypically absent in both parents, it will be absent, phenotypically, in their children and also in the germ cells of the child.* In just the same way two of the blondes of Sweden lack gens in their germ cells for the deeper grades of pigmentation, so that their children show, phenotypically, none of these deeper grades.

The hand, as is well known, generally has five fingers. However, there are certain communities in which a sixth finger is so common as scarcely to cause remark. The irregularity in the formation of fingers is due to a peculiarity of the developmental process which we may infer follows from the presence of a factor that gets in the way of the establishment of the five crenulations on the free margin of the embryonic flipper. Instead of that the flipper hesitates in laying down the crenulations that are the beginnings of the fingers, and when these are finally started they are formed late and vary in position, number and degree of development. This disturbance of development in the margin of the embryonic flipper is a genotypical condition which is not only in the gametes of the parents of a polydactyl or a syndactyl individual but is also in the germ cells of such children, so that when those germ cells in turn participate in producing a zygote, the zygote will develop abnormally when it comes to the production of fingers. We speak of inheritance of these finger abnormalities as a dominant trait. The dominance depends on the presence in the germ plasm of this disturber of development.

And so we might go on, referring to a number of other peculiarities that we denominate abnormalities of development. In certain persons the bilateral elements of the palate fail to come together, so that a cleft remains between them. There is no doubt about the genotypical basis of the phenomenon of harelip and cleft palate, but it is impossible to predict, with precision, in regard to the distribution of these traits in a family of children because the internal factors which shape the form of the head are so numerous and vigorous, as compared with that one condition which tends to prevent the formation of the palate that they frequently overcome this defect, so that a person who carries the tendency genotypically may actually not show it. I am not unaware that there are those who would maintain that harelip and cleft palate are due to an infection of the embryo by the poisons of syphilis, alcohol or some such other agent. Certainly I would not maintain that such poisons are not capable of producing this abnormality; but, as a general explanation of harelip and cleft palate, the theory is entirely inadequate for the reason that we have these defects developed with great certainty and regularity in certain strains of dogs, especially the Boston terriers. Again, the muscular control of the eyelid may be imperfectly developed, so that a congenital droop of the eyelid appears in many of the children of a family in which this developmental peculiarity is represented in the germ plasm. This germinal representative, again may be handed down from generation to generation without skipping any, as a typical dominant trait. There is, indeed, hardly one of the developmental processes of the body that may not proceed abnormally through some genotypical peculiarity. There is hardly an organ of the body whose development may not go astray; and the genotypical factor in these cases shows itself through repeated abnormal development in members of the same family.

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* From the Carnegie Institution of Washington.

Thus, the development of the nervous system may be abnormal. This is seen in an extreme case in amaurotic family idiocy, in which especially the sensory nerves seem early to fall behind in development. It is seen in the typical feebleminded infants in whom a factor for full cerebral development seems to be missing, so that the cerebrum lags behind in its ontogeny. If the impulse to full cerebral development is absent in the germ cells from both sides of the house, it seems to be absent in all the children also. Again, the bones may be improperly formed, so that the haversian systems are more or less completely absent. Such persons from infancy break their bones on slight provocation, and this condition tends to recur in successive generations. It is a so-called dominant trait. Again, the muscles may early lag behind in development, so that a dystrophia appears and the tendency to this muscular dystrophia has an hereditary basis, as is shown by its repeated occurrence in successive generations.

The genotypical failures of bone development show themselves strikingly in the failure of separation of the two bones, radius and ulna, which are made out of the cartilaginous plate that precedes them in development. Thus there are produced families characterized by the so-called radio-ulnar synostosis.

The constitution of the retina may be developed so abnormally that ability to distinguish colors shall be absent. This particular abnormality is of great interest, since the gen that is responsible for it has been located in the sex chromosome, a matter to which reference will be made a little farther on. In other persons the structure of the ear may be such that discrimination of variations in pitch is feeble or absent.

In the formation of the blood, the chemical elements responsible for coagulation may be absent or feeble in degree, so that the phenomenon of hemophilia appears. This defect, like that of color blindness and family optic atrophy, is located in the sex chromosome.

The number of organs that may be affected in some degree by imperfect or inadequate developmental impulses is very great. A catalogue of them would be unsuitable for a brief article.

Heredity shows itself also in variations in susceptibility or resistance to disease. Resistance or susceptibility are due to morphologic or chemical idiosyncrasies of the organisms, and such idiosyncrasies are widespread among plants and animals. Those who live in the eastern United States have recently seen the rapid elimination of the American chestnut through its inability to resist the growth of a particular fungus on its bark. This fungus, *Endothia parasitica,* was imported to this country from the Orient. The chestnut that lives there resists the disease, and the resistance may be imparted to the American chestnut through the union of its germ cells with those of the Asiatic, and the subsequent purification of undesired characters from the hybrid.

In the same way, wilt attacks watermelons and will cause the death of from 99 to 100 per cent of the individuals in a field. There are other related but inedible melons which resist this wilt, and the ability to resist has been transmitted through hybridization to the edible forms. There are certain strains of mice in which tumors grow with great rapidity, causing death. The cells of such a tumor taken from one individual to another of the same strain will cause another rapidly growing tumor there, but there are certain strains of mice that are well known to be so resistant to tumors that when the tumor cells have been inoculated in them the tumor cannot grow. The widespread occurrence of cancer in our population is due, in part, to the widespread existence of a chemical susceptibility whose dissemination has been brought about by matings and permitted to spread through the whole population, owing to the fact that cancer does not eliminate before the reproductive period.

Splenetic fever is the cause of death of vast numbers of European cattle in Texas. It has been demonstrated that the germ of the fever is disseminated by a tick; but the American bison and the zebu of India are immune to this disease and can transmit that immunity, with certain morphologic traits of form of the whole animal, to their offspring. We may not be surprised to find, therefore, that different strains of human beings react differently to inoculation with yellow fever and the germs of other insect-carried diseases.

The inheritance in disease is shown in a difference in general resistance. Thus, the late Alexander Graham Bell demonstrated the inheritance of a general resistance that lies at the bottom of great longevity. In certain families one can predict that, barring mechanical accidents, the members will probably live to the age of 80 or 90 years.

General and special resistance are no doubt due to idiosyncrasies in chemical constitution. How profoundly chemical constitution differs in different individuals is shown by the differences between different blood groups in respect to agglutination. We are not surprised to find strains of persons that are resistant to tuberculosis, that are resistant to tumors, that are tolerant of sugar, that show little fatigue, whose endocrine glands have idiosyncrasies of overactivity or underactivity.

It was formerly thought that it was sufficient to disprove the rôle of heredity to show that a particular disease, such as tuberculosis, is dependent, for instance, on *Bacillus tuberculosis.* This bacillus is obviously only one element of the disease of tuberculosis; the other element is a susceptible organism. The importance of susceptibility is shown by the statistical studies of tuberculosis, which demonstrate that husband and wife, living together with every opportunity for mutual infection, are less liable to show an active tuberculosis than father and children, who are more apt to have the same chemical constitution.

Even abnormal behavior can be shown to have a genotypical basis. The feeble inhibitions that give the characteristic picture of the tendency to violent outbreaks of temper or maniacal behavior can be shown to be inherited as a dominant trait, though the immediate agent may be some idiosyncrasy in the secretions of endocrine glands.

The importance of constitution in determining disease has, indeed, gained widespread recognition in the last few years. Constitution is determined, to be sure, only in part by the genotype. A genotypically resistant individual may, paratypically, lose this resistance, so that he becomes a victim of disease; but every profound student of constitution has to recognize the important part played by the germ plasm and the chemical idiosyncrasies that it establishes in the body.

From this point of view, constitution and heredity are not esoteric matters and they are, certainly, matters whose importance cannot be diminished by the vehement denials of the ignorant. Their importance has to be recognized and seized; and if the phenotype shows traits that are not desirable, an attempt must be made, through paratypical influences, to improve, if possible, the unfortunate conditions. That an unfortunate constitution may be established through inheritance is no reason for denouncing heredity and those who call attention to its importance. The fact rather challenges the profession to study in detail the inherited basis of defects and disease and to be in a position to advise in regard to marriage matings which may be unfortunate from the standpoint of offspring.

No discussion of heredity is adequate that does not refer to the new and incontrovertible evidence that it depends on the cell structures called chromosomes—the bodies in the cell nucleus which take the microscopic dyes deeply.

In the last two decades it has become established that their number is, in general, constant for a given species (with exceptions to be spoken of in a moment). In man there are twenty-four pairs, and of each pair one constituent has been derived from the ovum, the other from the sperm cell, the two cells that come together to form the zygote, or fertilized egg. Not only is the number of chromosomes constant, but they often have individual differences, so that one who is familiar with them can identify particular chromosomes. Indeed, a friend of mine, who is one of the very best of chromosomatologists, calls those he recognizes under the microscope by name, as Mary, Bessie or Jennie. There is no doubt of the individuality of the chromosomes.

The evidence that the chromosomes play a leading part in the internal control of development is, as stated above, overwhelming and incontrovertible. This evidence falls into two great classes: first, the evidence from the architecture of the chromosomes, and, second, from the results of variation in the number of chromosomes in the total chromosomal complex of the species.

Evidence from the architecture of the chromosomes was first gained when it was found that certain characteristics are linked in heredity. That is to say, if two linked characters are found together in one parent and are not represented in the other, the linked pair will tend to recur together in successive generations of offspring. Building on this fact and making use of the rapidly multiplying fruit fly *Drosophila melanogaster*, Morgan and his associates investigated linkage and discovered that the number of linkage groups in this species is the same as the number of pairs of chromosomes; that is, there are three large linkage groups corresponding to three large chromosome pairs, and one very small linkage group which is believed to correspond with a minute chromosome.

It was found, however, that in two linked characters occasionally the link was broken, so that a crossing over occurred by which some of the offspring had only one of the usually linked pair and others the other. It was found that the proportion of individuals showing this crossing over was variable for different traits, and, as a result of thousands of matings, the conclusion was strengthened that the greater the amount of crossing over of two traits, the greater the distance between the gens that are responsible for these traits in the chromosome. By working along this line, a chromosome map eventually became possible, indicating the relative position along the axis of the chromosome of the gens responsible for special traits of the fly. In some cases as many as thirty gens have thus been located in one chromosome. Thus, there has been given to each chromosome in *Drosophila* a definite architecture.

In other species, also, linkage has been found, not only of flies but of other insects, of plants and even of mammals. Thus it appears that linkage is a general phenomenon.

Any one who reads the literature of the breeding of *Drosophila*, of maize and of small mammals must be convinced of the truth of the theory that the chromosomes are made up largely of packets of enzymes that are respectively primarily responsible for the development of specific characters of the adult.

The other line of evidence as to the rôle of chromosomes in heredity is not less convincing. This investigation has been developed to a high degree by Drs. A. F. Blakeslee and John Belling, working with jimson weed, *Datura stramonium*. In this species there are twelve pairs of chromosomes, which differ from one another so that they can be distinguished as A, B, C, etc. Now it sometimes happens, through an irregularity in cell division, that an individual receives three chromosomes in place of the ordinary two in the A set. In this case the plant can be readily distinguished, as it grows in the field, through the possession of a number of bodily peculiarities. Again, the extra chromosome may be in the B set or in the C set or in any of the twelve, and in each case the peculiarities of the resulting plant are such that it can be readily told in the field. There may even be two extra chromosomes to each of the sets, although not all of the combinations are viable, or the whole chromosome complex may be doubled, making four to a set. Such a tetraploid is like the normal form but much more vigorous. Finally, by crossing a tetraploid and a normal diploid, a triploid condition may be produced in which the chromosomes appear in sets of three. This plant is distinguished, above all, by the great variability of its offspring. Finally, it is possible to secure a plant that has only one chromosome of each set; but this ordinarily does not set seed.

The relation between chromosome number and form is such that the breeder of *Datura* who is familiar with his stock can detect a new variant in the field and predict the corresponding chromosome aberration which must be responsible for it. The cytologist in the laboratory then examines the cells and can report on the condition of the chromosomes in them. And this frequently is found to coincide exactly with the conclusion reached (all unknown to the cytologist) by the breeder who examines the plants in the field.

Very little has been done in man on the relation between chromosomes and traits. This is because of the large number of chromosomes (twenty-four pairs) that there is in human beings and because insufficient study has been applied to the heredity of human traits. However, there is one case of linkage of traits that is well known in man. To explain this matter it is necessary to call attention again to the sex chromosome. In many species of animals and in a few plants it has been shown that one of the pairs of chromosomes is frequently peculiar in that the elements of the pair may be unlike in form and may behave in erratic fashion during cell division. This pair is known as the sex chromosome. In the female of mammals and flies, the chromosomes of the sex pair are alike in the female and unlike in the male. This chromosome is sometimes called the X chromosome, and the female is sometimes said to have this in the condition of XX, whereas in the male it is in the condition of XY. In *Drosophila* at least the Y chromosome seems to be without function; but in lower vertebrates and even in man, one or more traits have come to be associated with the Y chromosome.

The traits dependent on the X chromosome are sex linked. In human beings such sex-linked characters are color blindness, hemophilia, optic nerve atrophy and a few others less well determined. The existence of this linkage in human beings is shown by crisscross inheritance in that an affected father will have no affected children, and descendants of his sons will not show the defect. However, half of the sons of the daughters will show the defect and half of the daughters of the daughters will carry the defect, though they do not show it, and it will reappear in turn in their sons.

It thus appears that in inheritance of our traits and, among others, in inheritance of those somatic conditions which permit the development of disease, we are to a large extent what our chromosomes make us.

Apparently opposed to this conclusion there is a series of facts showing the vast importance of the endocrine glands in determining the peculiarities of form. Thus, cretins of different nationality resemble one another closely, and the same is true of the idiot type known as mongoloids. In the case of cretins certainly and in the case of mongoloids probably, the defect is due to an abnormal secretion of the endocrine glands. Indeed, as is well known, Arthur Keith believes that racial differences are largely due to peculiarities in the endocrine secretion, and he would, no doubt, urge that we are what our endocrine glands make us.

To harmonize these conflicting conclusions, we must recognize that endocrine glands themselves are developed under the control of the chromosomes; and so it seems to follow immediately that the quality of the endocrine glands is in part determined by the quality of the chromosomes. Not all children in the valleys of Switzerland where cretins are most abundant become cretins. The tendency is more marked in some families than in others, and so with goiter and other defects of the thyroid gland. The familiar nature of these defects of the thyroid gland indicate that its quality, in turn, depends on the chromosomes.

Studies that have been made on the relation of chromosomes to heredity point the way to future researches in the heredity of man. With the aid of discoveries that have been made in the lower animals and plants on mendelian inheritance and chromosomal dependence of development, we are in a position to investigate the genetic basis of human traits and human diseases. It is a reproach to science, in a way, that studies in this field have been so long neglected. The reason for this neglect is, however, clear—it is the great expense involved in making these studies on human beings where control of matings is impossible. The method of study, under these limitations, is clear. One must go to the families in which the traits that we are studying are found and see of what kind are the matings that have brought them out. This study involves much travel on the part of many collaborators and careful analysis of the results. On account of the practical nature of the results which are certain to flow from such investigation, it should be carried out even though the cost of the research will be considerable. Man suffers incalculable loss through ignorance of the method of inheritance of these traits, which mean so much to the health and welfare of the people in this and other countries.

THE TECHNIC OF MEDICATION

A SERIES OF ARTICLES ON THE METHODS OF PRESCRIBING AND PREPARING, THE INDICATIONS FOR, AND THE USES OF VARIOUS MEDICAMENTS *

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(Continued from page 564)

INTRAPERITONEAL INJECTION

Intraperitoneal injection or infusion is likely to be of importance in small children in whom intravenous injection is difficult or impossible on account of the smallness of the veins and the restlessness of the patient, especially in those too old for sinus puncture, the fontanel having closed.

Intraperitoneal infusion of fluid has become within the last few years a method of great practical importance for such children, who vomit obstinately and are in danger of dehydration and acidosis, unless fluid and carbohydrate are promptly supplied. Enemas may not be retained. Hypodermoclysis is strongly resented by the little ones because it leaves the place of injection somewhat sore.

Technic.—The skin of the abdomen having been sterilized with tincture of iodine and alcohol, the needle is introduced in an upward direction through the abdominal wall in the median line just below the umbilicus. To avoid piercing a distended bladder, the additional precaution should be taken to have the bladder emptied just before resorting to the puncture. With the sudden cessation of resistance which indicates that the needle has passed into the peritoneal cavity, the solution is introduced. Warm physiologic sodium chloride solution may be infused in quantities of from 100 to 250 cc. in small children and from 300 to 400 cc. in older children. This may be repeated every twelve hours.[168]

Though there is practically no danger of puncturing the normal intestine, to be absolutely safe, Weinberg[169] suggests placing a small cut through the skin by means of the scalpel and then introducing and forcing a completely dull needle in a rotary manner through the abdominal wall. He recommends, as the best place for puncture, the juncture of the outer and middle thirds of a line connecting the navel with the anterior superior iliac spine.

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* This is the thirty-fifth of a series of articles on "The Technic of Medication." When completed, the articles will be assembled in book form.

[168] Aikman, John: Parenteral Administration of Fluids, J. A. M. A. 74:244 (Jan. 24) 1920.

[169] Weinberg, M.: München. med. Wchnschr., 1920, p. 1264.

Danger of infection seems to be chiefly present in small infants in extremely poor nutritional condition; on account of this, Backes,[170] who reports a few cases of peritonitis in such children for which he holds the infusion responsible, has abandoned it in the presence of very severe nutritional disturbance; but he finds the method favorable for older children, who do not seem to be nearly as liable to infection resulting from this procedure.

Quite a number of clinicians report good, prompt and striking results not only from physiologic sodium chloride solution but also from 6 per cent dextrose solution, and from 2 to 3 per cent sodium bicarbonate, though there are some who believe that the latter causes more abdominal distention than the saline solution.

That absorption of substances in solution is good after intraperitoneal infusion is shown by Dandy and Rowntree,[171] who report that phenolsulphonphthalein is found in the blood in from two to four minutes, in the urine in from four to six minutes, and in the lymph of the thoracic duct in from twenty to sixty minutes. This indicates that the absorption of soluble materials is by way of the blood stream rather than the lymphatics. Corpuscular bodies, on the other hand, such as red blood cells, are absorbed chiefly through the thoracic duct, and much more slowly.

Zeigler[172] found, by experiments on animals, that the absorption of various drugs from the peritoneum is more gradual than from intravenous injection, but also more lasting. This was true for epinephrine as well as for glyceryl trinitrate. Magnesium sulphate or chloride caused motor and sensory paralysis, just as it does on intravenous injection.

That irritant substances, such as neo-arsphenamine, produce a transient aseptic peritonitis was shown by Rosenberg,[173] who, experimenting on rabbits, found a mild inflammatory reaction with desquamation of cells and the formation of an exudate; nevertheless, absorption was complete in twenty-four hours. There was no evidence of permanent injury to peritoneum or viscera, complete recovery having apparently occurred within twelve days. He believes that intraperitoneal injection is therefore perfectly justifiable. The drug should be dissolved in sterile distilled water rather than in salt solution. Small quantities of concentrated solution seem better borne than large quantities of dilute solution.

That the injection of fixed oil into the peritoneal cavity is harmless has been shown by Schwartze[174] by means of animal experiment. Its absorption, however, is very slow. He found oil still present from one to six months after its intraperitoneal injection. The interesting fact has been brought out by such experiments that a dissolved nonvolatile body like sudan III can be absorbed independently of the oil. The fact that the peritoneum and the subperitoneal fat were found stained suggests the possibility of topical intraperitoneal chemotherapy. He concludes that "the usefulness as a pharmacological method of the intraperitoneal injection of fixed oil as a solvent for fat soluble substances would seem to be limited if the entrance of the dissolved material into the circulation is dependent on the relatively rapid absorption of the solvent oil. This, however, does not imply that its use for administering volatile, serum-soluble and even suspended material might not be advantageous."

INTRAPERITONEAL BLOOD TRANSFUSION

It having been shown by a number of observers experimentally as well as clinically that intact red blood corpuscles may be promptly absorbed from the peritoneal cavity, provided compatible blood is used and provided the patient is not in an extremely poor condition, we may actually speak of intraperitoneal blood transfusion, which may be of life-saving importance in infants and young children with veins so small as to be inaccessible and in whom injection into the superior longitudinal sinus is impossible or undesirable. A special advantage of this administration route lies in the fact that one would not hesitate to inject in this manner small quantities (from 20 to 30 cc.) repeatedly, so as to avoid overloading the circulation, when it is much enfeebled. This can be done by the use of defibrinated blood, which Hans Opitz[175] has used in two cases of severe anemia of infants with very satisfactory results, even though the blood was 1 and 2 hours old. Opitz emphasizes the fact that typing to avoid agglutination or hemolysis is as necessary here as in intraveneous infusion. He does not feel certain about the clinical admissibility of citrated blood.

Siperstein and Sansby[176] report satisfactory experiments on rabbits, and Siperstein[177] cites five cases, with favorable results in three from intraperitoneal injection of citrated blood. They find this method simple, practical and efficient.

Ruh and McClelland[178] have experimented on guinea-pigs and dogs, with defibrinated, citrated and whole blood. They find that the injection of whole blood, which is the most simple, gives no more reaction than modified blood, and is therefore to be preferred. They have obtained encouraging results in the few cases in which they had the opportunity to use it, and believe that this form of transfusion could be made a valuable clinical procedure in selected cases of sick infants, not only for hemorrhagic disease of the new-born and anemia, but also in many other conditions, such as prematurity, athrepsia, acidosis, and extraordinarily exhausting diseases.

SUBARACHNOID INJECTION

The term "subdural" injection is obviously not as correct from the standpoint of anatomy as is "subarachnoid." The adjective "intrathecal," also applied to this injection, though shorter, is unfortunately not as distinctive, because "theca" also means a tendon sheath. These three terms may, however, be considered synonymous and to mean the introduction of material into the cerebrospinal fluid or the space occupied by it. This fluid is normally as clear and colorless as water, has a low specific gravity (from 1.006 to 1.007), contains but little protein (from 0.2 to 0.5 per cent), and is very poor in cells. That it has an important mechanical function, serving as a water cushion to the central nervous system, is shown by the fact that any marked change in its pressure relations is accompanied by even serious disturbance in functions. Rise in pressure is responsible for some of the signs and symptoms of meningitis, meningismus and hydrocephalus, as is demonstrated by the striking improvement that follows the mere lowering of pressure by means of puncture. Insufficient pressure is probably the main cause of the so-called puncture headache.[179] It usually begins the day following the puncture, but may come on earlier or later, and be accompanied by nausea, vomiting, dizziness, mental confusion, and faintness. The symptoms are brought on and aggravated by exercise, and are relieved by recumbency. The flatter the patient lies, the better he feels. It is due to a disturbance in the pressure relations in the cerebrospinal fluid, most commonly from leakage through the puncture hole to such an extent that the brain is left without its water cushion. It is most liable to occur when normal pressure existed within the canal before the puncture and when a large needle is employed. On the other hand, when the pressure is high, puncture often relieves headache as well as other symptoms. It should therefore be a fundamental principle in subarachnoid injection to retain or restore as nearly as possible normal pressure conditions in the sac. If the pressure is normal (from 40 to 130 mm. of water on lumbar puncture [Quincke]) as much fluid should be withdrawn as one intends to inject. If the pressure is abnormal—as measured while the patient is breathing and resting quitely, for straining may raise the pressure considerably—fluid is permitted to escape slowly under repeated control of its height until it is approximately normal, never below normal. If the pressure is very high, above 300, it is best not to reduce it below, say, 150 at the first puncture. The flow should be checked instantly if any distress appears, such as headache, dizziness, nausea or vomiting, or if there is a sudden marked lowering of pressure. The latter change, which might result even in sudden death, may occur when the communication between the spinal and cranial subarachnoid spaces is suddenly occluded, as may happen during lumbar puncture in case of tumor of the posterior fossa. Hence, even suspicion of the presence of such a condition contraindicates such puncture.

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[170] Backes: München. med. Wchnschr. **68**: 1032 (Aug. 26) 1921.

[171] Dandy and Rowntree: Ann. Surg **59**: 4, 1914.

[172] Zeigler, W. H.: The Intraperitoneal Injection of Certain Drugs, J. Am. Pharm. A. **14**: 86 (Feb.) 1925.

[173] Rosenberg, William: The Intraperitoneal Administration of Neo-Arsphenamine, J. A. M. A. **82**: 682 (March 1) 1924.

[174] Schwartze, E. W.: Some Observations on the Behavior of a Fixed Oil (Peanut Oil) Injected Intraperitoneally, J. Pharmacol. & Exper. Therap. **17**: 115 (March) 1921.

[175] Opitz, Hans: Intraperitoneale Blutzufuhr als Substitutionstherapie bei kindlichen Anamien, Klin. Wchnschr. **3**: 784 (April 29) 1924.

[176] Siperstein, D. M., and Sansby, J. M.: Intraperitoneal Transfusion with Citrated Blood, Am. J. Dis. Child. **25**: 107 (Feb.) 1923.

[177] Siperstein, D. M.: Intraperitoneal Transfusion with Citrated Blood, Am. J. Dis. Child. **25**: 202 (March) 1923.

[178] Ruh, H. O., and McClelland, J. E.: Intraperitoneal Transfusion in Infants, Ohio State M. J. **19**: 780 (Nov.) 1923.

Position has a great deal to do with pressure relations in the cerebrospinal canal as well as with diffusion of substances through it. That this is the case has already been suggested by what has been said in connection with "puncture headache." When the patient is sitting, the normal pressure on cisternal puncture is zero or even negative, while on lumbar puncture it may be found to be as high as 130 mm. of water. When the patient is recumbent, the pressure on simultaneous lumbar and cisternal punctures will be found approximately equal. If, on such combined puncture, withdrawal of fluid from either opening fails to influence the pressure in both places, it is clear evidence of a block somewhere in the canal.

According to experiments by Goldmann,[180] verified by many others, injection of dyes into the spinal subarachnoid space stains the spinal cord and brain stem but not the cerebral hemispheres. The explanation for this observation is offered by Solomon, Thompson and Pfeiffer,[181] who, studying the circulation of phenolsulphonphthalein and of serum in the cerebrospinal system, find that under ordinary conditions there is not very much movement from one locus to another. The movement of the introduced substances depends on circulation of the cerebrospinal fluid, which is not very active, on diffusion, and on gravity effects. Dye introduced into cerebrospinal fluid in vitro will rise against gravity by diffusion, whereas blood serum seeks the lowest level. When serum and phenolsulphonphthalein are mixed, the serum tends to hold the dye and prevents diffusion to the extent shown when the dye is used alone. When blood serum is introduced into the subarachnoid space, we may assume that it will tend to reach the lowest portion of the cerebrospinal fluid system by a slow diffusion process. There is no evidence to show that there is a sufficiently active circulation of the cerebrospinal fluid to send the blood serum in a direction contrary to gravity. It seems probable that the blood serum introduced into the lumbar subarachnoid space will make its way cephalad only when the head is lower, or at least as low as the lumbar subarachnoid space. If effects on the higher portion of the nervous system are desired, the Trendelenburg position should be assumed for, say, an hour following lumbar injection. Even then, because of slowness of diffusion and rapidity of absorption, it must be assumed that blood serum does not reach the ventricles or the cerebral cortex in any great amount. In order to reach the brain, the point of election for introduction of serum is the cisterna magna. Indeed, by cisternal injection, we put the serum in at the point at which the most good will be done also in a diffuse condition. The serum will then be carried up over the cortex, down the spinal canal, and to the base of the brain. In spinal anesthesia, on the other hand, in which we deal with diffusible bodies the effects of which we desire to localize, the patient should not be allowed to assume a recumbent position without having his head well supported on pillows. The Trendelenburg position must, under these circumstances, be avoided.

The importance of the maintenance of an approximately normal composition of the cerebrospinal fluid is indicated, in the first place, by the elaborate mechanism that exists to protect it. While the blood promptly rids itself of added material by throwing it into the tissue spaces, it cannot contaminate the cerebrospinal fluid in this manner, for the choroid plexus[182] which secretes the fluid protects it against chlorides, bromides, iodides, nitrates, ferrocyanides, salicylates, acetates, methylene blue, fluorescein, biliary pigments, mercury and arsenic, as has been shown by Mestrezat, Sicard, Camp, Catton and others, though volatile substances, like ether, chloroform and, curiously enough, methenamine, pass into the cerebrospinal fluid. This selective action of the choroid militates strongly against our ability to medicate the central nervous system, and has been invoked to explain our helplessness against infections of this system in spite of our possession of specific remedies. They simply do not reach organisms that have gained access to this sheltered location.

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[179] Dana, C. L.: Puncture Headache, J. A. M. A. **68**: 1017 (April 7) 1917.

[180] Goldmann, E. E.: Vitalfärbung am Zentral Nerven System, Arch. f. klin. Chir. **101**: 735, 1913.

[181] Solomon, H. C.; Thompson, L. J., and Pfeiffer, H. M.: Circulation of Phenolsulphonphthalein in the Cerebrospinal System, J. A. M. A. **79**: 1014 (Sept. 23) 1922.

[182] The author is fully aware of the alternate theory, according to which the cerebrospinal fluid originates in the perivascular lymph spaces of the brain, which discharge it chiefly into the lateral ventricles, the choroid plexus having to do with absorption rather than secretion. This does not, however, alter the pharmacologic facts or their therapeutic application.

While elimination into the subarachnoid space is thus very poor, absorption from it of diffusible substances and even of antiserums is remarkably rapid; for the subarachnoid system chiefly deals with absorption of the cerebrospinal fluid which is secreted within the cerebral ventricles. In view of this rapidity with which remedies leave the cerebrospinal fluid, even when introduced into it, one should not rely on treating syphilis or any other disease of the central nervous system by intrathecal methods exclusively. Even in cerebrospinal meningitis the intravenous use of antiserum is advocated in conjunction with its subarachnoid injection.

Though by means of injection we can set at naught this elaborate protection of the *sanctum sanctorum* of the system, we cannot with impunity alter the composition of the cerebrospinal fluid to any great extent. So sensitive is the nerve tissue that even irrigation of the spinal canal with physiologic sodium chloride solution produces marked irritation leading to convulsions and speedy death in many experiments, as shown by Weed and Wegeforth.[183] These authors found that irrigation of the spinal and cerebral subarachnoid spaces is much better tolerated by cats if the irrigating fluid is composed of sodium chloride, potassium chloride and calcium chloride in proper proportions (modified Ringer's solution, made up as follows: sodium chloride, 0.9 per cent; calcium chloride, 0.024 per cent; potassium chloride, 0.042 per cent) demonstrating that a fluid to be harmless to the nerve tissues must be not only isotonic but also as nearly isoionic as possible.

The great sensitiveness of the central nervous system to variations in the hydrogen ion concentration has been shown, among others, by Dandy and Blackfan,[184] who found that the slightest deviation from the neutral point of a solution of phenolsulphonphthalein, in the direction either of acidity or alkalinity, produced violent symptoms of irritation.

No wonder that irrigation with various of the commonly used antiseptics produced untoward reactions. None of them prolonged the life of meningitic cats, in the experiments of Wegeforth and Essick.[185] Flexner and Amoss,[186] experimenting with compound solution of cresol and strong silver protein (protargol), found these harmful rather than helpful.

It may be that ethylhydrocupreine is an exception to this general proposition. Pneumococcus meningitis seems to be amenable to subarachnoid injection of this substance. First employed successfully by Wolff and Lehmann in one case in 1913 by lumbar and ventricle injection, Wolff[187] reports a number (three) of additional cases treated by giving 0.05 Gm. of ethylhydrocupreine (optochine) in 10 cc. of distilled water, subthecally by lumbar puncture. Other clinicians, among them Leschke, Rosenow, Löwe and Meyer, and Steinbrink,[188] have also obtained encouraging results.

Arsphenamine as well as mercurials have been found much too irritating to be injected intrathecally. Hence the advocacy of using, for subarachnoid injection, arsphenaminized serum[189] and mercurialized serum.[190] The former seems to have secured sufficient success to suggest that this method is of some value, in addition to the ordinary systemic treatment, in incipient cases of syphilitic infection of the nervous system, to merit a brief description here. One hour after from 0.6 to 0.9 Gm. of arsphenamine or neo-arsphenamine has been given intravenously, 40 cc. of blood is withdrawn into sterile centrifuge tubes and allowed to coagulate. It is then centrifugalized. The following day, 12 cc. of serum is pipetted off and diluted with 18 cc. of sterile physiologic sodium chloride solution and the mixture is heated at 56 C. for half an hour. By means of puncture, some of the cerebrospinal fluid is withdrawn and the serum slowly injected, preferably by the gravity method.

It is the relative harmlessness of serum that makes it possible to employ antiserums intrathecally. Because antimeningococcus serum is antibacterial in its action and must come in intimate contact with the organisms to display its efficacy, its subarachnoid administration at the earliest possible moment in epidemic cerebrospinal meningitis must be considered obligatory, as it has reduced the mortality of this disease from the appalling figure of from 50 to 90 per cent to one of about 25 per cent. Earlier as well as more radical (intracisternal, intraventricular) use of it promises a still further reduction. So important is the earliest possible administration of antimeningitic serum that the physician should not hesitate to perform lumbar puncture on merest suspicion to secure fluid for examination, just as he would make a throat and nose culture on suspicion of diphtheria. Intrathecal injection of tetanus antitoxin, though it has given a lower mortality in experimental tetanus than has intravenous injection,[191] has been rather disappointing in clinical application. Antiserums are preferably, though not necessarily, diluted with an equal amount of sterile water to make them more nearly approximate the cerebrospinal fluid in composition.

The ideal solvent for medicinal agents is the patient's own spinal fluid. Thus, Stirling[192] uses, for spinal anesthesia, procaine hydrochloride crystals put up in sterile ampules which hold enough spinal fluid to dissolve the crystals. (Laboratories put up such ampules containing 100, 120, 150 and 200 mg. of procaine hydrochloride.) One centigram is given for each 5 Kg. of body weight. Sufficient spinal fluid is collected in the ampule to dissolve the crystals, after which the anesthetic solution is slowly introduced by lumbar puncture. It should be noted that lumbar anesthesia, even with the best technic, is more dangerous than other forms of anesthesia in a general run of cases. Hence it is indicated only for operations on the lower extremities and on the genito-urinary organs unsuitable for local anesthesia, and in patients for whom inhalation anesthesia is especially dangerous, as in those suffering from heart and lung diseases, especially in weak and elderly persons.

It is interesting and rather remarkable that oil is tolerated on subarachnoid injection. At least, Sicard and Forestier[193] have shown that this is true of lipiodol

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[183] Weed, L. H., and Wegeforth, Paul: Experimental Irrigation of the Subarachnoid Space, J. Pharmacol. & Exper. Therap. **13:** 317 (July) 1919.

[184] Dandy, W. E., and Blackfan, K. D.: An Experimental and Clinical Study of Internal Hydrocephalus, J. A. M. A. **61:** 2216 (Dec. 20) 1913; I[illegible] Am. J. Dis. Child. **8:** 406 (Dec.) 1914.

[185] [illegible] Essick, C. R.: The Effect of Subarachnoid Injections of Antiseptics on the Central Nervous System, J. Pharmacol. & Exper. Therap. **13:** 335 (July) 1918.

[186] Flexner, Simon; and Amoss, H. L.: Chemical Versus Serum Treatment of Epidemic Meningitis, J. Exper. Med. **23:** 683 (May) 1916.

[187] Wolff, Siegfried: Ueber Meningitis bei Kindern, Deutsche med. Wchnschr. **51:** 1117 (July 3) 1925.

[188] Steinbrink, Otto: Beitrag zur Heilbarkeit der Pneumokokken-meningitis, Therap. d. Gegenw. **66:** 188 (April) 1935.

[189] Swift, H. F., and Ellis, A. W. M.: The Treatment of Syphilitic Affections of the Central Nervous System, Arch. Int. Med. **12:** 331 (Sept.) 1913.

[190] *Byrnes, 1914.*

[191] Sherington, C. S.: Lancet **193:** 964, 1917.

[192] Stirling, W. C.: Intraspinal Anesthesia in Genito-Urinary Surgery, J. Urol. **12:** 535 (Nov.) 1924.

[193] Sicard, J. A., and Forestier, J.: L'huile iodée en clinique application thérapeutique et diagnostic, Bull. et mém. Soc. méd. d. hôp. de Paris **47:** 309 (Feb. 23) 1923.

(iodized poppy-seed oil), which they have employed by injection into the spinal canal for roentgenographic purposes. That it is not perfectly harmless is shown by Sharpe and Peterson,[194] who report a case in which injection of lipiodol, which was arrested at the site of a spinal block in the middorsal area, so aggravated the patient's symptoms and signs that the oil had to be removed five and one-half months later by laminectomy, at which were disclosed two encysted globules of lipiodol surrounded by numerous newly formed adhesions. In two other cases, the oil fifteen months later was still unabsorbed and evidently encysted. Hence the authors would restrict the use of lipiodol to those cases in which its aid is absolutely required for accurate localization of the lesion, and then use it only at lumbar puncture with the patient in the Trendelenburg position, so that, unabsorbed, it can later sink to the less important structures of the caudal spinal theca, where its presence produces little or no harm clinically. They warn against its use early, as a routine, and merely for confirmatory evidence. Denk[195] likewise warns against the possible irritating action of iodized oil used by cisternal puncture, and advises its use with utmost care and on imperative indication only.

Air has been introduced into the subarachnoid space for roentgenographic and even for therapeutic purposes. It certainly has been shown that air insufflation, done with proper care, is at least harmless.

From the standpoint of technic, we must distinguish between three different forms of subarachnoid injection: lumbar injection, cistern injection, and ventricle injection. Needless to say, for all of them strict asepsis must be practiced, as failure in this respect may lead to meningitis and death.

(To be continued)

New and Nonofficial Remedies

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application. W. A. Puckner, Secretary.

ERYSIPELAS STREPTOCOCCUS ANTITOXIN.—An antitoxic serum prepared by immunizing animals against the toxin of the hemolytic streptococci of erysipelas.

Actions and Uses.—Reports have been published which indicate that the injection of erysipelas streptococcus antitoxin favorably affects the course of erysipelas by lowering the temperature, decreasing leukocytosis, causing the lesions to fade, and relieving the symptoms of toxemia.

Dosage.—100 cc. of the unconcentrated serum injected intravenously, or 15 cc. of the concentrated preparation injected intramuscularly or intravenously administered early in the disease, if possible. In severe cases or those seen late or in those which fail to respond to the first injection, repeated doses may be given as indicated.

H. K. Mulford Co., Philadelphia.

Erysipelas Streptococcus Antitoxin Mulford.—This antitoxic serum is obtained by injecting horses intradermally with strains of hemolytic streptococci isolated by H. Amoss from human cases of erysipelas lesions, bleeding the horses and when test bleedings show the serum to have reached the desired potency, separating the serum, sterilizing it and preserving by the addition of 0.35 per cent of phenol. The product is claimed to possess both antitoxic and antibacterial immune bodies. It is marketed in packages of one 100 cc. vial.

OSCODAL.—Cod liver Oil Concentrate-Metz.—A preparation of the nonsaponifiable fraction of cod liver oil, containing the antiophthalmic and antirachitic fat soluble vitamins. It has 500 times the antiophthalmic (vitamin A) potency of cod liver oil when assayed by the method of the U. S. P. for cod liver oil, and its antirachitic (vitamin D) potency is such that 0.02 Gm. per day will suffice to initiate recalcification in the leg bones of young albino rats.

Actions and Uses.—Oscodal possesses properties similar to those of cod liver oil so far as these depend on the fat soluble vitamin content of the latter.

The experiments of Dubin and Funk (*J. Metabol. Research* 4:467, 1923) seem to show that a cod liver oil extract prepared by the method used for the preparation of oscodal is efficient in controlling rickets and ophthalmia in rats on diets deficient in these vitamins. Louis Fisher (*J. Metabol. Research* 4:481, 1923) has presented evidence to show that oscodal is as efficient in the treatment of clinical rickets as crude cod liver oil.

Dosage.—For infants or children, from 0.01 to 0.04 Gm. and for adults, from 0.04 to 0.06 Gm., three times a day.

Manufactured by the H. A. Metz Laboratories, Inc., New York. U. S. patent applied for. U. S. trademark 210,246.

Oscodal Tablets. Each coated tablet contains oscodal, 0.02 Gm., approximately representing the vitamin potency of cod liver oil, 2 cc. (30 minims).

Oscodal is manufactured from physiologically standardized cod liver oil which complies with the standards of the U. S. Pharmacopeia X. In addition, the oil is required to have (1) a content of fat soluble vitamin A approximately five times greater than that present in the U. S. P. product as determined by the U. S. P. assay, and (2) an antirachitic potency determined by the method of McCollum, Simmonds, Shipley and Parke (*J. Biol. Chem.* **51**: 41 [March] 1922) as modified by Steenbock and Black (*J. Biol. Chem.* **64**: 263 [June] 1925) using ration 2965, so that the administration of 0.02 Gm. of oil per day will suffice to initiate recalcification in the leg bones of young albino rats.

Oscodal is required to have 100 times the potency of the oil from which it is made when tested for its antiophthalmic and antirachitic potency by the methods used to assay the cod liver oil from which it is manufactured. To determine the potency of oscodal tablets, 100 tablets are powdered in a glass mortar, the powder is transferred to a paper thimble, placed in a Soxhlet extractor, and extracted with ether; the ether is evaporated off and the remaining material dissolved in vitamin-free peanut oil in the proportion of 1 to 100, the oil solution is then tested for its vitamin potency.

PITUITARY SUBSTANCE-L. & F. DESICCATED.—The pituitary gland of cattle, including the infundibulum and the anterior and posterior lobes, dried and powdered, without the addition of preservative or diluent.

Actions and Uses.—See Pituitary Gland, New and Nonofficial Remedies, 1926, p. 281.

Dosage.—From 0.06 to 0.13 Gm. (1 to 2 grains) daily.

Manufactured by Lehn & Fink, Inc., New York. U. S. patent 1,309,357 (July 8, 1919; expires 1936). No U. S. trademark.

Tablets Pituitary Substance L. & F. Desiccated ½ grain.

The fresh glands are freed of extraneous matter, finely ground, spread on glass plates and dried in vacuo (15 mm.), at a temperature below 37 C. Pituitary substance L. & F. desiccated is a grayish powder, practically odorless. One part represents approximately 4 parts of fresh gland.

ANTERIOR PITUITARY-L. & F. DESICCATED.—The anterior lobe of the pituitary gland of cattle, dried and powdered, without the addition of preservative or diluent.

Actions and Uses.—See Pituitary Gland, New and Nonofficial Remedies, 1926, p. 281.

Dosage.—From 0.2 to 0.6 Gm. (3 to 9 grains) daily.

Manufactured by Lehn & Fink, Inc., New York. U. S. patent 1,309,357 (July 8, 1919, expires 1936). No U. S. trademark.

Tablets Anterior Pituitary L. & F. Desiccated, 1 grain.

The fresh glands are freed of extraneous matter, finely ground, spread on glass plates and dried in vacuo (15 mm.) at a temperature below 37 C. Anterior pituitary L. & F. desiccated is a grayish powder, practically odorless. One part represents approximately 4 parts of fresh gland.

POSTERIOR PITUITARY-L. & F. DESICCATED.—The posterior lobe of the pituitary gland of cattle, dried and powdered, without the addition of preservative or diluent.

Actions and Uses.—See Pituitary Gland, New and Nonofficial Remedies, 1926, p. 281.

Dosage.—From 0.02 to 0.03 Gm. (³⁄₁₀ to ½ grain).

Manufactured by Lehn & Fink, Inc., New York. U. S. patent 1,309,357 (July 8, 1919, expires 1936). No U. S. trademark.

Tablets Posterior Pituitary L. & F. Desiccated, ³⁄₁₀ grain.

The fresh glands are freed of extraneous matter, finely ground, spread on glass plates and dried in vacuo (15 mm.) at a temperature below 37 C. Posterior pituitary L. & F. desiccated is a grayish powder, practically odorless. One part represents approximately 4 parts of fresh gland.

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[194] Sharpe, William; and Peterson, C. A.: The Danger in the Use of Lipiodol in the Diagnosis of Obstructive Lesions of the Spinal Canal, J. Bone & Joint Surg. **8**: 348 (April) 1926.

[195] Denk, W.: Ueber die Sicardsche Myelographie und ihre Ergebnisse, Arch. f. klin. Chir. **140**: 208 (May 6) 1926.

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SATURDAY, AUGUST 28, 1926

THE TREATMENT OF PERNICIOUS ANEMIA

Pernicious anemia has long offered problems of peculiar perplexity. Despite numerous disillusionments and many discouragements, investigators have not given up the hope of securing some worth-while solutions. The frequency with which the malady appears keeps it continually within the attention of the physician, so that interest is not permitted to lapse as it may in the case of the occasional epidemic disorder. The symptoms involve the hematopoietic, gastro-intestinal and nervous organ systems, for all of which helpful modes of treatment have long been available, leading to the recurrent hope that some of these may be found advantageous in pernicious anemia. Naturally, theories concerning etiology have not been wanting; but the varied efforts to cure the disease through knowledge of them have encountered discouragement owing to the salient circumstance that remissions are observed in most patients regardless of the sort of treatment they may have experienced. These spontaneous improvements, even in the severely anemic patients, and what has well been termed the "bizarre course" that their disease often runs, have made it notoriously difficult to determine accurately the effect of any procedure on the disorder. If, therefore, the admitted seriousness and importance of pernicious anemia justify and even provoke repeated effort in relation to its problems, it is highly important that these be given the most serious consideration. Medical history has afforded all too many instances of the unwisdom of overhasty generalizations concerning new therapeutic measures.

With this statement of appropriate reserve, we again revert to recent announcements[1] that seem to deserve careful thought. They deal with the alleged importance of suitable dietetic treatment of pernicious anemia. There is nothing essentially novel about this as a general proposal. The thesis that improper food can cause, and suitable food alleviate, anemia has often been defended. In the most recent applications of the general idea, however, cognizance is taken of the especial virtues that certain dietary ingredients may exhibit, particularly with reference to hematopoiesis. Thus, Whipple and Robscheit-Robbins and their associates[2] at the University of Rochester School of Medicine have extolled the value of liver, in particular, in accelerating blood regeneration following acute hemorrhage, and the value of iron added to the diet to decrease the anemia due to chronic loss of blood. Following these suggestions based on animal experimentation, Minot and Murphy[1] of the Harvard Medical School have subjected a considerable series of patients with pernicious anemia to a regimen including foods rich in "complete" proteins and iron—particularly liver—and containing an abundance of fruits and fresh vegetables, and relatively low in fat. The last restriction was based on somewhat empiric observations, involving in part the possibility of changing the intestinal flora, rather than to any direct influence on blood formation or destruction. Following the new diet, all the patients thus far carefully examined have shown "a prompt, rapid and distinct remission of their anemia, coincident with at least rather marked symptomatic improvement." The recollection of alleged similar benefits from repeated transfusion, splenectomy and drug therapy alone will make one duly reserved in the face of what seems to be a most promising therapeutic procedure; and the passing of a year or two will permit more accurate judgment as to the permanence of the benefits already observed.

There is nothing in this recent undertaking at variance with the different hypotheses of causation of the anemia, whether due to a toxemia of gastro-intestinal origin, a vitamin deficiency, or a combination of etiologic factors. Liver, fruits and vegetables, in contrast with starch, sugar and fat in their usual dietary guises, supply liberally the food components that have been demanded. Koessler[1] and his co-workers at the University of Chicago have demonstrated that animals in a state of chronic vitamin A deficiency may develop a severe anemia that is relieved by suitable dietary changes. Vitamin exhaustion may open the way to infection and intoxication through altered permeability of the mucous membranes. The variety of symptoms thereby engendered in the pathogenesis of pernicious anemia may consequently call for liberal inclusion of vitamin-bearing foods in the diet. The Chicago pathologists have accordingly phrased their therapeutic suggestion as follows:

> The routine use of a rationally balanced diet which has proved itself thus far of decided value in the blood regeneration of patients suffering from severe

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[1] Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by a Special Diet, J. A. M. A. **87:** 470 (Aug. 14) 1926. Koessler, K. L.; Maurer, Siegfried; and Loughlin, R.: The Relation of Anemia, Primary and Secondary, to Vitamin A Deficiency, ibid. **87:** 476 (Aug. 14) 1926.

[2] Whipple, G. H.; Hooper, C. W., and Robscheit, F. S.: Blood Regeneration Following Simple Anemia, Am. J. Physiol. **53:** 151, 167 (Sept.) 1920. Whipple, G. H.; Robscheit, F. S., and Hooper, C. W.: Blood Regeneration Following Anaemia, ibid. **53:** 236 (Sept.) 1920. Whipple, G. H., and Robscheit-Robbins, F. S.: Favorable Influence of Liver, Heart and Skeletal Muscle in Diet on Blood Regeneration in Anemia, ibid. **72:** 408 (May) 1925 (cf. p. 41); Iron Reaction Favorable, Arsenic and Germanium Dioxide Almost Inert, in Severe Anemia, ibid. **72:** 419 (May) 1925.

anemias, aplastic as well as erythroblastic, is the most promising procedure in the treatment of certain anemias, especially pernicious anemia. The Harvard formula is more specific in the suggestion that liver or similar food may be somewhat more advantageous than any ordinary nutritious diet[3] without this.

SUPRARENAL FUNCTION

The suprarenal glands of man weigh only about 4 Gm. each, yet this small amount of tissue is essential to life. Survival after complete ablation of the glands is brief at best. Little wonder, then, that these structures have challenged the most careful attention of investigators. The glands are innervated by way of the splanchnics, and exhibit one of the few instances of the presence of true secretory nerve fibers. They possess a rich blood supply, receiving more blood per gram-minute than any other tissue of the body.[4] These facts by themselves suggest a prominent physiologic rôle, as was first recognized three quarters of a century ago by Addison in the description of the disease that bears his name and by Brown-Séquard in his experimental studies.

Investigation of the suprarenals since that day has brought forth a series of unexpected and often perplexing facts. The isolation of the highly potent epinephrine from the suprarenal medulla naturally lent some probability to the conjecture that this hormone is physiologically important. The now well demonstrated circumstance, however, that the medulla of the gland can be removed by cautery without affecting the health of an animal, and the added fact that epinephrine will not save life after suprarenalectomy, led to the conclusion that the suprarenal cortex, and not the medulla, is essential to life. This has been evidenced anew by recent experiments of Banting and Gairns[5] at the University of Toronto. Lucas,[6] who examined the blood of their animals, found the most noticeable change following double suprarenalectomy to be the decided increase in concentration of the blood indicated by the increase in total solids, total nitrogen and the ratio of corpuscles to plasma. The removal of the suprarenals had no appreciable effect on the cholesterol content of the blood stream or the ratio of cholesterol ester to free cholesterol. The tendency for an increase in the urea and nonprotein nitrogen, and the decrease in the percentage of chlorides in the blood, are further important chemical changes. The increase in urea and nonprotein nitrogen seems to depend in some way on the ability of the kidney to excrete, since the administration of saline solution reduces them only when accompanied by diuresis. The percentage of chloride in the blood can be maintained at its normal level by the administration of saline solution, regardless of whether the kidney is excreting or not. According to Banting and Gairns, the postmortem findings of enlarged lymph glands, degeneration of the liver cords, and nephrosis of the kidney strongly indicate the accumulation of a toxic substance. Further evidence to support this fact is that the blood of dogs which died as a result of desuprarenalization is toxic. A protein diet with its consequent accumulation of the protein split products shortens the duration of survival and hastens death in partially desuprarenalized dogs.

This is a return to the older view of a detoxifying function of the suprarenals. It applies presumably to the cortex. For the medullary substance there remains Cannon's much debated theory of the emergency function. According to this conception the neurosecretory mechanism is thrown into activity in times of nervous and bodily stress, with a resultant outpouring of epinephrine, which serves to facilitate the requisite reactions to such stress. Thus, the blood pressure rises, the blood is shunted to the brain and muscles, and muscular contraction is made more efficient.

PROTEIN AND LACTATION

The problem of the rôle of protein in nutrition seems to be of perennial interest. Like many highly debated themes, it appears to have become the subject of agitation as well as investigation, with the result that one may find devotees of the most antipodal views. Furthermore, among these the pendulum of preference seems to swing from one extreme to another, while moderation in protein intake remains a norm for those not given to excesses or remissions of any sort. A few years ago, much emphasis was placed on the asserted advantage of a dietary comparatively poor in protein. The advocates of a low-protein regimen were insistent on the physiologic economy and blessings that it was assumed to represent. In contrast with this, a recent article[1] presents the arctic experiences of the explorer Stefansson, who lived about nine years on a diet essentially of meat and water. The testimony of this keen observer regarding both himself and the Eskimos having similar dietary habits with whom he became familiar in the Far North speaks against any deleterious effect from the liberal ingestion of protein. The reviewer insists that no ill effects could be detected after the long continued almost exclusive use of meat. Stefansson affirms that his observations on the health and longevity of Eskimos led him to the conclusion that the high protein diet has no deleterious effects on their circulation or kidneys. He does feel, however, that the mixed diet to which they have resorted in recent years is making them prematurely old and is producing infirmities in those past middle life similar to those of civilized communities. He considers the prime cause of this to be increase of constipation, which has everywhere accompanied the adoption by the Eskimos of imported foods.

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[3] It should be noted that somewhat similar suggestions were put forward in 1923 by Gibson, R. B., and Howard, C. P.: Metabolic Studies in Pernicious Anemia, Arch. Int. Med. **32**: 1 (July) 1923.

[4] Hooker, D. R.: The Suprarenal Glands, Glandular Therapy, Chicago, American Medical Association, 1925.

[5] Banting, F. G., and Gairns, S.: Suprarenal Insufficiency, Am. J. Physiol. **77**: 100 (June) 1926.

[6] Lucas, G. H. W.: Blood and Urine Findings in Desuprarenalized Dog, Am. J. Physiol. **77**: 114 (June) 1926.

[1] Lieb, C. W.: The Effects of an Exclusive, Long-Continued Meat Diet, J. A. M. A. **87**: 25 (July 3) 1926.

The experimentalists also are not without conflicting records. Not long ago an English investigator[2] ventured the hypothesis that the lactating mother rat, by consuming a diet rich in protein, produces a milk that is poisonous to her young, while the mother herself remains in good condition. Referring to this conclusion, Nelson[3] has protested that it is not in harmony with our knowledge of the effects of the dietary nutrients on the quality and quantity of the milk produced by the lactating cow. It seemed highly improbable, she adds, that the dietary protein per se could be the cause of the difficulties noted, for the addition of protein to the lactating cow's diet to increase the milk yield is a well established practice among dairymen, and a general review of the literature of the subject has shown no accounts of a deleterious milk being produced thereby.

The explanation of the symptoms observed in offspring nursed by mothers that lived on a diet rich in protein seems to be clear. According to Nelson's studies at Yale University, the "spasms" are an expression primarily of a deficiency in vitamin B rather than of richness in protein in the maternal diet. Simmonds[4] of Johns Hopkins University has also corroborated the conclusion that protein fed at high levels of intake during lactation is not injurious to the young, but rather stimulates the production of milk of good quality and the consequent rapid growth of the young. Hence, while science is struggling with the problems of the possible relation of nitrogenous waste to the pathogenesis of hypertension and nephritis, we may rescue the proteins, for the present at least, from the odium of responsibility for unsuccessful lactation.

THE INORGANIC COMPOSITION OF BONE AND BLOOD

It has long been realized that the bones are a storehouse of phosphorus and calcium in particular. Probably more than 99 per cent of the latter element in the body belongs to the bones. Eighty-five per cent of their mineral matter can be accounted for as calcium phosphate. Curiosity naturally arises with respect to the variations that the bones may undergo in their mineral make-up under varying conditions of health and of disease. One of the final contributions of the late John Howland[5] of Johns Hopkins University dealt in a characteristically thorough manner with the problem of the nature of the inorganic salts in rachitic and nonrachitic bones. Mineral analyses of these have often been reported; for the most part, however, the technic has been unsatisfactory. According to these studies the calcium phosphate in all bones, rachitic and nonrachitic, appears to be tricalcium phosphate. Different bones of the same individual have the same inorganic composition. Whenever it is possible to determine accurately the activity of the rachitic process, as in rats, it can be shown that the ratio of calcium phosphate to calcium carbonate is greater in the normal than in the rachitic animal. This is presumably also true in human rickets. It is interesting to learn that precipitates made from solutions comparable in their inorganic composition to the serum of normal and rachitic animals contain essentially the same calcium phosphate compound as bone. The ratio of calcium phosphate to calcium carbonate, other conditions being the same, varies directly with the inorganic phosphorus content of the solution. According to the Baltimore investigators, when calcification occurs the type of calcium phosphate compound laid down appears to be independent of the inorganic phosphorus concentration of the serum. The ratio of calcium phosphate to calcium carbonate, however, is higher, the greater the inorganic phosphorus concentration of the serum. Local conditions may determine the localization of the calcification, but the composition of the deposit depends on that of the body fluids and ultimately on the composition of the serum.

There is growing evidence that the total content of calcium in the blood is by no means an index of the calcium ions in the circulating fluids. Ionized calcium is likely to represent the "physiologically active" manifestation of the element. The latest evidence[6] secured in various types of tetany indicates that whenever active tetany is present there is a profound decrease in the free calcium. A low calcium concentration without tetany is possible (as in nephritis), but here the free calcium is practically unchanged. When cure was effected in the cases of infantile tetany, the free calcium reached its normal level, 5 mg. for each hundred cubic centimeters of serum, before the total calcium came up to the normal level of 10 mg. According to Pincus, Peterson and Kramer, the failure of the calcium concentration of the serum in tetania parathyreopriva to increase after irradiation with the mercury vapor quartz lamp as it does in patients with infantile tetany makes it highly probable that infantile tetany is not a form of parathyroid tetany, and this assumption is strengthened by the absence of any increase of the inorganic phosphorus in the serum of children with tetany comparable to that found in the serum of dogs after parathyroidectomy. The fact that the free calcium of the serum may remain constant in patients with chronic nephritis, even when the total calcium is definitely reduced, serves to explain why such patients do not develop convulsions.

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[2] Hartwell, G. A.: Biochem. J. **15:** 140, 1921; **15:** 563, 1921.

[3] Nelson, P. Mabel: Maternal Diet and Lactation, J. Home Economics **18:** 383 (July) 1926.

[4] Simmonds, Nina: Am. J. Hyg., Supp. **4:** 23 (Sept.) 1924.

[5] Kramer, Benjamin; and Howland, John: The Quantitative Estimation of Calcium, Magnesium, Phosphate and Carbonate in Bone, J. Biol. Chem. **68:** 711 (June) 1926. Howland, John; Marriott, W. M., and Kramer, Benjamin: Studies upon the Inorganic Composition of Bones, ibid., p. 721.

[6] Pincus, J. B.; Peterson, H. A., and Kramer, Benjamin: A Study by Means of Ultrafiltration of the Condition of Several Inorganic Constituents of Blood Serum in Disease, J. Biol. Chem. **68:** 601 (June) 1926.

Current Comment

THE THYROID AND HAIR GROWTH

The falling of the hair is a familiar manifestation of certain disease states. It is so characteristic of cretinism and myxedema that the symptom has been associated by clinicians with hypothyroidism. Improvement in hair growth usually follows successful medication with thyroid. In certain types of thyroidal hyperfunction, the hairiness of the body may become augmented to an extent that makes it noticeable. The relation of cause and effect in all these instances is not readily established. The growth of hair presumably has a nutritional background of influence that should not be overlooked. In animals the hair coat usually is a dependable indication of their general nutritive condition. The thyroid functions are intimately related to the processes of nutrition in the organism, as the measurable effects on the metabolism clearly evidence. One is impelled to consider, therefore, whether the conditions of hair growth observed in abnormalities of thyroid activity are attributable directly to glandular influences or rather to the associated disturbances in the nutritive states. Recent experiments by Chang[1] at the University of Chicago tend to support the theory of a specific thyroid influence. Animals deprived of their thyroids show retardation of hair growth, as do those that are undernourished. Thyroid feeding improves the development of the hair coat in either case, even when there is a continued loss of weight through chronic underfeeding. What component of the gland is responsible for this hair growth effect remains to be ascertained.

STREET RISK OF CARBON MONOXIDE POISONING

The combustion of millions of gallons of gasoline each year is providing facilities and comfort undreamed of a few decades ago. It has often been remarked that each form of progress is carried out to the detriment of some one. The cost of changes that benefit the many not infrequently involves the comfort of a few. Manifold advantages sometimes promote minor ills. This seems to apply to the gasoline engine, which has revolutionized motor traffic throughout the world. Only a few years ago, chronic intoxication with carbon monoxide was a medical rarity, usually chargeable to leaky gas pipes that allowed the escape of contaminating "water gas." Today, carbon monoxide is recognized as a menace of automobile exhaust gases. The annual records of deaths through careless exposure in badly ventilated garages have begun to arouse attention; at any rate, the danger is understood even if it may too often still be disregarded. When, in 1923, Henderson and Haggard[1] of Yale University included city streets in the list of possible harmful localities with respect to the presence of the deadly gas, there was some hesitation in believing that the "free air" outdoors could ever become really dangerous to health. Observations recently reported[2] from Philadelphia actually support the existence of a definite street risk of repeated or chronic slight carbon monoxide anoxemia in congested mercantile districts of our large cities. At any rate, it is demonstrated that patrolmen who supervise heavy traffic movement may manifest symptoms of malaise at the end of a busy day's work; and the offensive exhaust gas has been incriminated by demonstration of a saturation of the hemoglobin of the blood to a maximum value in some instances of 30 per cent. Relief is not difficult when once the cause of harm is known.[3]

Association News

MEETING OF THE COUNCIL ON PHYSICAL THERAPY, HELD AT ASSOCIATION HEADQUARTERS, MONDAY, JULY 19, 1926

The meeting was called to order by the Chairman, Dr. Mock, at 11:15 a. m., with the following members in attendance: Drs. Bovie, Compton, Pemberton, Mock, Warthin, Desjardins, MacKee, Williams, Granger, West and Fishbein, and Mr. Holmquest.

The minutes of the second meeting of the Council were approved.

REPORT OF COMMITTEE ON FIELD, SCOPE AND PRESENT STATUS OF PHYSICAL THERAPY

Dr. Mock presented the report of the Committee on Field, Scope and Present Status of Physical Therapy. It was agreed that the report be considered by the members of the Council, and that a final draft be prepared for publication.

COMMITTEE ON ORGANIZATION

Dr. Warthin reported for the Committee on Organization concerning the rules governing acceptance of products by the Council.

REPORT OF COMMITTEE ON EDUCATION

Dr. Bovie stated that there had been no meeting of the committee, but that he had made changes in the report as previously submitted. On request, he read the report as he had rewritten it. It was agreed that this report be given separate consideration by the members and then issued for publication.

It was agreed that the rules of the Council be put into type at once and sent to each member of the Council, and that their publication in The Journal be made as soon as they have been put into final form.

On request, Mr. Holmquest, Secretary, read a statement of his impressions regarding the work of the Council.

A recess for luncheon was taken at 12:45 p. m.

The Council reconvened at 2:10 p. m., all those being present that were in attendance at the morning session, with the exception of Professor Compton.

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[1] Chang, H. C.: Specific Influence of the Thyroid Gland on Hair Growth, Am. J. Physiol. **77:** 562 (Aug.) 1926.

[1] Henderson, Yandell; and Haggard, H. W.: Health Hazard from Automobile Exhaust Gas in City Streets, Garages and Repair Shops, J. A. M. A. **81:** 385 (Aug. 4) 1923.

[2] Wilson, Elizabeth; Gates, Irene; Owen, H. R., and Dawson, W. T.: Street Risk of Carbon Monoxide Poisoning, J. A. M. A. **87:** 319 (July 31) 1926.

[3] Walton, D. C.; Eldridge, W. A.; Allen, M. S., and Witherspoon, M. G.: Carbon Monoxide Poisoning, Arch. Int. Med. **37:** 398 (March) 1926.

lecturers include Dr. William H. Welch, Johns Hopkins University School of Hygiene and Public Health, Baltimore; Dr. Edmund B. Wilson, Columbia University, New York; Winthrop J. V. Osterhout, Sc.D., of the Rockefeller Institute, and Dr. Charles V. Chapin, health officer of Providence, R. I.

MINNESOTA

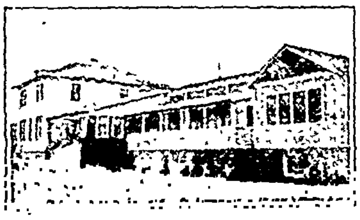
Personal.—Dr. Charles H. Mayo, Rochester, brigadier general, O. R. C., has been ordered to active duty for training for a period of two weeks at Carlisle Barracks, Pa., effective, September 12.

Public Hearing on Iodized City Water.—The city commissioners of Duluth held a public hearing, August 10, on the question of placing iodine in the city water supply as a means of preventing goiter. According to the Duluth *Herald*, the hearing was indecisive. Among others who appeared were physicians, some of whom opposed the measure and some of whom favored it. However, an ordinance will be prepared providing for iodization of the city water supply, and introduced in the council at the next meeting.

MONTANA

Health Association Election.—Dr. Thomas F. Walker, Great Falls, was elected president of the Montana Health Association at the annual meeting, July 14, at Billings, and Dr. Samuel E. Leard, Livingston, vice president.

Trachoma Clinic on Indian Reservation.—A six day trachoma clinic has just been completed at Browning on the Blackfeet Reservation under the direction of F. C. Campbell, supervisor, Northwest Indian Reservations. A similar clinic was held at Browning two years ago, and the latest survey showed that by this surgical procedure, the statistics fell from 30 per cent to 3 per cent of the population. During this last week, 130 trachoma patients were operated on. The methods used were grattage—Darier's method—on the milder types and in the chronic forms, tarsectomy, three senile cataracts, two enucleations with immediate implantation of a gold ball, six cases of pterygium, eight cases of entropion, one tattooing with india ink for leukoma of the eye of an Indian girl, two cases of chronic glaucoma, several minor defects, and a rare form of lipoma of both corneas. The following persons of the Indian Service were assigned by Commissioner Charles H. Burk to assist at the clinic:



Indian Hospital at Browning.

Dr. Laurence Webster Fox, Philadelphia.
Dr. Charles E. Yates, traveling specialist in trachoma, Browning, Mont.
Dr. George O. Keck, Fort Lapwai tuberculosis sanatorium, Idaho.
Dr. Hugh Mullarky, Flathead reservation, Montana.
Dr. John G. Veldhuis, Fort Peck reservation, Montana.
Dr. Clarence D. Fulkerson, Fort Peck reservation, Montana.
Dr. C. A. Kerner, Tongue River reservation, Montana.
Dr. Burton L. Stevenson, Blackfeet reservation, Montana.
Dr. James W. Craig, Blackfeet reservation, Montana.
Dr. Herman E. Levin, Blackfeet reservation hospital, Montana.
Dr. Mary H. McKee, Fort Berthold reservation, North Dakota.
Dr. Howard W. Bateman, Choteau, Mont.
Dr. Earle Strain, Great Falls, Mont.
Dr. Paul O. Neraal, Cut Bank, Mont.
Dr. Walter L. DuBoise, Conrad, Mont.
Dr. Charles F. Coulter, Great Falls, Mont.
Joseph Woodlock, Wyoming.
J. L. Livingston, Fort Belknap reservation, Montana.
C. H. Minette, Cut Bank, Mont.
William Kyle, Conrad, Mont.

Among those present were Major Gen. Hugh L. Scott, Philadelphia, U. S. Indian Commissioner; Matthew K. Sniffen, Philadelphia, secretary, Indian Rights Association; F. C. Campbell, Browning, Mont., supervisor, Northwest Indian reservations; Forrest Stone, acting superintendent, Blackfeet reservation; L. W. Shotwell, superintendent, Rocky Boy reservation, Montana, and Hon. Scott Leavitt, Montana, chairman of Indian Affairs in Congress.

NEW MEXICO

Personal.—Dr. Miguel F. DesMarais, Las Vegas, has been appointed superintendent of the state insane asylum to succeed Dr. Franklin H. Crail.

Health Officer Resigns.—Dr. Ernest W. Prothro, health officer of McKinley County, has resigned, and Dr. Arthur M. Washburn has been appointed his successor. Dr. Washburn recently took special training with one of the health units of the Rockefeller Foundation.

Investigation of Intestinal Disease.—Dr. J. G. Wilson, U. S. Public Health Service, has been detailed by the Surgeon General to conduct the investigation of "Rocky Mountain Diarrhea." Mrs. W. S. Enlows, a bacteriologist of the service, has arrived in Santa Fe from Washington to establish a laboratory in connection with the investigation (The Journal, June 26).

NEW YORK

Personal.—Dr. M. Luise Diez has been appointed associate director of the division of maternity, infancy and child hygiene of the state department of health.

Society News.—Dr. Wendell C. Phillips, New York, President of the American Medical Association, addressed the annual meeting of the Oneida County Medical Society at Newport, July 13.

Hospital News.—The general construction contract for the U. S. Veterans' Hospital to be erected near Northport, L. I., was awarded, August 12, on the basis of $2,719,956; it will be a 1,000 bed institution for neuropsychiatric patients; the site covers 550 acres, the group will comprise thirty-five buildings, and work will begin at once.——The Woodmen of the World have purchased 130 acres of land near New Baltimore, and will erect a sanatorium there.

New York City

Liquor Licenses Revoked.—The local district prohibition administrator's office recently revoked the liquor licenses of the following:

Dr. Onofrio Cirillo
Dr. William B. Wood
Dr. Herman L. Enselberg
Dr. Nathan Lederfriend
Dr. Glenn L. Voorhees
Dr. John Lo Pinto
Dr. Herman R. Castro
Dr. Max Bender
Dr. James E. Lee
Dr. Melchiorre Vinci
Dr. Henry S. Frintnight
Dr. James H. Potter
Dr. Evan Styles Potter

Diphtheria Trends Downward.—There were fewer cases of diphtheria in New York in the first six months of 1926 than in the corresponding period in any of the preceding five years. According to the city health department, there were 2,993 cases of diphtheria reported in the first six months of this year, while in 1921, during the same period, there were 19,472 cases; 1922 showed a great decline over the preceding year, the number of cases being 6,697. There has been a gradual decline since that time and the health department concludes that the record can be attributed in reasonable measure to the use of toxin-antitoxin.

Course in Accident Prevention.—New York University, in cooperation with the American Museum of Safety, will offer a collegiate course in accident prevention this fall which will be open to alumni of the university and students, and employees of industries which are members of the museum of safety, government officials and employees, and others who are professionally interested in accident prevention. C. W. Price, director of safety, International Harvester Company, formerly manager of the National Safety Council, M. Graham Cole, director of safety, Metropolitan Life Insurance Company, and others will assist in the instruction. This is an effort to check the increase in industrial and public accidents and is in response to a demand from all parts of the country for trained leaders in safety work.

OHIO

Health at Dayton.—Telegraphic returns to the U. S. Department of Commerce from sixty-five cities with a total population of about 29,000,000 for the week ending August 7 indicates that the lowest mortality rate (6.2) was at Dayton, and that the mortality rate for the group of cities as a whole was 10.6. The mortality rate for Dayton for the corresponding week last year was 9.6, and for the group of cities, 10.7.

Approved Tourists' Camps.—The state department of health receives inquiries daily from the traveling public for lists of approved tourists' camps, indicating that the public is learning the value of camp sanitation. There are 234 camps along the highways of Ohio which have been approved. A list of these camps was published in the July issue of *Ohio Health News*, and an appended list of camps approved since that time appears in the August 15 issue.

New Diagnostic Laboratory.—The people of Cleveland approved a bond issue last year for $375,000 to construct at the city hospital a central diagnostic laboratory. The plans have been completed and the contract will be awarded soon. The building will be just north of the present nine story general hospital; it will have two floors and a basement, and an amphitheater seating 135. It will contain a museum, a morgue, rooms for research, five large units for technical work, and other features to make it most modern.

Licenses Revoked.—The state medical board, at a meeting July 13, revoked the licenses to practice of the following physicians:

Thomas W. Clark, Canton, and Francis A. Hopkins, Akron, were charged with unprofessional and dishonest conduct, specifically lending their name to one E. O. Shawman, an illegal practitioner who is not a physician.

Samuel F. George, Lima, who was charged with unprofessional and dishonest conduct, specifically, in the use of extravagantly worded advertisements.

L. D'Orville Chabut, Youngstown, because of his conviction of a felony; he pleaded guilty in common pleas court to criminal abortion, and was sentenced to the state penitentiary; the sentence was suspended because of his age on condition that he not engage again in the practice of medicine in Ohio.

PENNSYLVANIA

Pilgrimage of Chemists to Priestley's Grave.—The American Chemical Society will make a pilgrimage, September 5, to the grave and old home of Joseph Priestley on the banks of the Susquehanna in Northumberland, which is now preserved as a shrine of American chemistry by the alumni of Pennsylvania State College. The American Chemical Society is said to have been organized shortly after a pilgrimage of chemists to this shrine on the one hundredth anniversary of the discovery of oxygen; three of the original group survive—Samuel A. Goldschmidt, Ph.D., New York, Prof. Abram A. Breneman, New York, and Frank W. Clarke, LLD., U. S. Geological Survey, who is at present in England, and the former two chemists will be present at the September meeting. The hosts will include Mrs. Frances Priestley Forsythe, great-granddaughter of the founder of modern chemistry, the Central Pennsylvania Section of the American Chemical Society and the G. G. Pond Memorial Association, which is composed of alumni of Pennsylvania State College. A fireproof museum has been erected on the lawn of the old Priestley mansion to house a collection of Priestley's original laboratory apparatus and personal effects. The trip to Northumberland will be made by special train from Philadelphia. The ceremonies will be brief, consisting probably of each person placing a flower on the grave, and of an account by Dr. Goldschmidt of the first meeting of chemists at this place in 1874.

State Medical Meeting.—The seventy-sixth annual meeting of the Medical Society of the State of Pennsylvania will be held at the Bellevue-Stratford Hotel, Philadelphia, October 11-14, under the presidency of Dr. Harry W. Albertson, Scranton, whose address will be followed by that of Dr. Wendell C. Phillips, New York, President of the American Medical Association; other guests will include:

Dr. Aldred S. Warthin, professor of pathology, University of Michigan Medical School; Dr. Francis Carter Wood, Columbia University School of Medicine, New York; Dr. Howard T. Karsner, Western Reserve University School of Medicine, Cleveland; Dr. Francis W. Peabody, Boston; Dr. Joseph C. Bloodgood, Baltimore; Edward C. Kendall, Ph.D., University of Minnesota; Dr. Isaac A. Abt, Northwestern University Medical School, Chicago; Dr. A. Graeme Mitchell, University of Cincinnati College of Medicine; Dr. Conrad Berens, New York; Dr. George L. Tobey, Boston, and Dr. Howard Fox, New York.

Two guest speakers have been allotted to each section, and arrangements have been made for each section to show cases in the clinics. The lectures for the general public this year will be on Wednesday evening in the convention hall of the hotel, and will be followed by the president's reception. The mayor of Philadelphia, the Hon. W. F. Kendrick, and Dr. Moses Behrend, president, Philadelphia County Medical Society, will deliver the addresses of welcome. Among the many interesting and practical features of the program, comprising demonstrations, clinics, addresses and exhibits, will be symposiums on scarlet fever, encephalitis, dermatology in relation to medicine, the thyroid gland, gynecology, thoracic surgery and industrial surgery.

Philadelphia

Medicine at the Sesquicentennial Exposition.—The medical exhibit at the Sesquicentennial Exposition is organized in four grand divisions—medicine, dentistry, pharmacy and nursing—and is located in the Palace of Education on Pattison Avenue. Medicine is subdivided into (1) the prevention of contagious and infectious diseases; (2) prevention of heart and kidney diseases; (3) prevention of nutritional diseases; (4) prevention of metabolic diseases; (5) prevention of industrial diseases; (6) prevention of skin diseases; (7) prevention of nervous and mental diseases. The dental exhibit shows in comparison an old fashioned and a modern dental office, and demonstrates preventive dentistry in relation to public health. The pharmacy exhibit comprises, among other things, the fixtures and furnishings of the old Glentworth Drug Store, the various departments of a modern drug store and laboratories for making chemical and clinical tests in the standardization of biologic products. The nursing exhibit shows the history of nursing in this and other countries, and demonstrates the opportunities offered to nurses after graduation. The hygiene and sanitation exhibit comprises preschool children, school children, recreation, bacteriology, immunology, municipal hygiene, public health administration, domestic hygiene, nutrition, social hygiene, industrial hygiene and entomology. There is a tuberculosis exhibit composed of eighteen miniature stages devoted to various phases of prevention and treatment. The Interstate Dairy Council has an exhibit showing the handling and treatment of milk and its relation to health and disease. There has been erected an emergency hospital under the general direction of Dr. Wilmer Krusen, director of public health of Philadelphia, and chairman of the general committee on health and medicine at the exposition, and under the immediate charge of Dr. Joseph C. Doane, medical director, Philadelphia General Hospital; it has a capacity of ten beds, the staff is from the Philadelphia General Hospital, and its work is limited to first aid. The medical executive committee comprises Dr. William D. Robinson, Dr. David Riesman, Dr. Henry D. Jump, Emerson R. Sausser, D.D.S., Dr. William A. Pearson, George H. Meeker, Ph.D., Dr. George A. Knowles and Dr. Seneca Egbert. Talks on child hygiene have been made daily since August 19 by Albert C. Mitchell, supervisor of publicity and exhibits of the Texas State Department of Health; these are features of the children's clinic in connection with the exhibit of the children's bureau of the U. S. Department of Labor in the Transportation Building.

SOUTH CAROLINA

Dr. Beachley Resigns.—Dr. Ralph G. Beachley, who organized the Spartanburg County Health Unit in 1925 and has since been health officer, has resigned to become deputy state health officer of South Carolina, and Dr. Henry G. Callison, health officer of Newberry County, will become county health officer of Spartanburg County about August 25.

Society News.—Dr. Dove Walter Green, Mullins, was elected president of the Little Pee Dee Medical Society at its recent annual meeting at Myrtle Beach, and Dr. Hawkins K. Jenkins, Jr., was reelected secretary-treasurer. Among the speakers were Dr. Charles Frederick Williams of the state hospital, Dr. Frank H. McLeod, and Dr. Lonnie M. McMillan. Among the guests were Dr. George H. Bunch, Columbia, president of the state medical association.

TENNESSEE

Walnut Log Medical Society.—This society will meet at the Walnut Log Hotel, Reelfoot Lake, Tenn., September 21-22; all physicians in good standing in their local societies are invited to attend and become members. The society's primary object is an outing for physicians at the famous hunting and fishing grounds; a scientific program, however, has been prepared, which includes prominent men from St. Louis, Memphis, Nashville and other cities. Reelfoot Lake can be reached by good roads from Union City, Obion and Dyersburg, Tenn., and from Hickman, Ky. Arrangements for transportation from any one of these places to the lake will be made for any one who will communicate with the secretary, Dr. Robert Lyle Motley, Jr., Dyersburg, Tenn.

VIRGINIA

Typhoid Clinics.—The county health department at Whaleyville and Cypress administered antityphoid vaccine to 196 persons, July 29; clinics are held at various towns every week, and in the country, where as many as twenty persons congregate to receive the vaccine. There has been no outbreak of typhoid.

Personal.—Dr. and Mrs. Smelt W. Dickinson, Marion, celebrated their golden wedding anniversary, July 12; Dr. Dickinson has practiced medicine in Marion for forty-five years.——Dr. Bathurst B. Bagby has resigned as chief medical inspector of the bureau of health of Richmond to accept a position as health officer of the city of Athens and Clarke County, Ga., and will take up his new duties, September 1.——Dr. John S. Horsley, Jr., has been placed in charge of the department of plastic and thoracic surgery at St. Elizabeths Hospital, Richmond.——Dr. Henry S. Daniel, Jr., has been elected mayor of Louisa, to complete the unexpired term of the late George S. Johnson.

Decline in Birth Rate.—There were 8,840 fewer births in Virginia in 1925 than in 1921, the loss being in the ratio of 5,934 white and 2,906 colored children. The first half of the year 1926 shows a further loss to the state in births of 2,072 as compared with the same period last year; in the former years, the loss was larger among the white population, but in the first three months of 1926, this was reversed, the white loss in that period being 6.1 per cent of the 1925 white total for the same period, and the colored loss 11 per cent of the 1925 colored total. The state board of health states that to study this situation carefully the vital statistics must be complete and strenuous efforts are being made to secure accurate registration of every birth. Parents have become interested in birth registration. There are, however, from fifty to a hundred physicians who are negligent in reporting, and some of them have been fined. "Mothers' certificates" are now required for entrance to the public schools. These are mailed to mothers within four months after a birth is recorded; if any mother has no certificate for a child who enters school this fall, she should write to the bureau of vital statistics, Richmond.

HAWAII

Funds for Research.—The Rockefeller Foundation has contributed to the University of Hawaii $20,000 a year for five years, according to *Science,* as a special research fund for the study of the biologic, mental and social characteristics of the people of Hawaii.

No Liquor Licenses Revoked.—In replying to a request for the names of physicians whose liquor licenses have been revoked in Hawaii, the district prohibition administrator replied that the liquor permits of no physicians in the territory had been revoked up to the present time.

GENERAL

Osler Memorial Volume.—The Osler Memorial Volume, published under the auspices of the International Association of Medical Museums, and reviewed in The Journal, August 7, may be secured from the managing editor, 836 University Street, Montreal, at $10 a copy.

Alumni News.—The second annual meeting of the Ensworth-Central Medical College Alumni will be in St. Joseph, Mo., at the St. Francis Hotel, Wednesday evening, October 13, during the Kansas City Fall Clinical Week. Dr. Charles G. Geiger, president of the alumni association, will be the host; all graduates and professors are cordially invited.

Report of Committee of Health Officers.—The Conference of State and Provincial Health Authorities of North America, at its recent annual meeting, Atlantic City, adopted the report read by Dr. Mathias Nicoll, Jr., chairman of the committee on relations between medical men and health officers. A copy of this report has been received by the speaker of the house of delegates of the American Medical Association for reference to that body.

American Pharmaceutical Association. — This association will hold its convention at the Bellevue-Stratford Hotel, Philadelphia, September 13-18; there will be addresses of welcome by Mayor Kendrick of Philadelphia; Dr. Wilmer Krusen, director of public health; Dr. Moses Behrend, president, Philadelphia County Medical Society, and Joseph W. England, president, Pennsylvania Pharmaceutical Association. Surg. Gen. Hugh S. Cumming, U. S. Public Health Service, Sir William Glyn-Jones, former member of the British Parliament, and Frank T. Stone, Washington, D. C., president of the National Association of Retail Druggists, will speak. There will be a picnic in the country adjacent to Philadelphia, a dinner, reception and ball at the Bellevue-Stratford, and a day at the exposition.

Meeting at Woods Hole.—There will be a meeting, August 28, at the Marine Biological Laboratory, Woods Hole, Mass., a luncheon served at the club and a trip on the laboratory launch *Cayadetta* for a discussion of ways and means of (1) securing all the scientific literature of the world and making it available for the scientists in this country; (2) placing this material where it is most needed, and (3) informing the scientists of the location of this material. It has been proposed that the discussion be made concrete so that the meeting may lead to results; that suggestions for cooperative action be made and that the possibility of arranging for another meeting be considered at the time of the annual session of the American Medical Association, or at the time of the American Library Association meeting.

Pullman Porters All Vaccinated Against Smallpox.—*Health News,* published by the New York State Department of Health, quotes the director of the department of sanitation and surgery of the Pullman Company to the effect that before a negro is employed by the Pullman Company as porter, he must be vaccinated or show evidence of a recent successful vaccination. The physician making the examination must satisfy himself that the scar is less than 5 years old, and if older, the applicant for employment must be reinoculated. There are about 12,000 negroes employed by the Pullman Company as porters. In this connection, we are reminded of an editorial, published in The Journal, July 22, 1922, which stated that "in this day of rapid intercommunication, it is well to recall that smallpox was introduced into Montreal in 1885 by an unvaccinated Pullman car porter." In the epidemic that followed, there were about 15,000 cases and 3,164 deaths.

American Hospital Association.—The twenty-eighth annual convention of the American Hospital Association will be at Atlantic City, N. J., September 27-October 1. There will be a special train from Chicago with a day's stop-over at Washington; the fare is the convention rate of a fare and a half with no extra charges. Reservations may be had from the managing editor, Hospital Management, 537 South Dearborn Street, Chicago. The program for this meeting will center around two factors: (1) the extension and adaptation of hospital aid to the whole community, and (2) the conservation of the people's contribution through the strictest kind of economy in every phase of hospital construction and administration. There will be foreign delegates from Great Britain, China, Panama, Australia, the Philippines, Hawaii, Porto Rico and other places. The exhibits on the steel pier will comprise educational and scientific exhibits and technical equipment and supplies. There will be a reception, entertainment and dancing Tuesday evening, arranged by the New Jersey Hospital Association and the department of the institutions and agencies of New Jersey. The headquarters of the American Hospital Association for this meeting will be at the Hotel Chalfonte-Haddon Hall.

FOREIGN

Low Record of Fatalities on British Trains.—The extremely small risk in traveling on trains in Great Britain is indicated in a report in the New York *Times,* which states that only one passenger lost his life during 1925 as the result of railway accidents, among the millions of passengers who travel yearly on British trains. In two previous years—1908 and 1901—it is said that not a passenger was killed on British railways. The history of railroading in Great Britain shows comparatively few fatalities, only one in 1909; six in 1924, and three each in 1916 and 1919. There was an accident in 1915, in which it is said, 224 members of a troop train were killed. The low record of fatalities is attributed to the large number of safety appliances in use, the excellent signal system, and to great care generally throughout the system.

Personal.—A dinner in honor of Dame Mary Scharlieb, M.D., was arranged by the London branch of the Medical Women's Federation in July. The *British Medical Journal* quotes that "at 81 she is still operating with unimpaired judgment and skill."——Dr. Mañes, Madrid, is the official delegate from Spain to the International Dental Congress at Washington this month.——Dr. M. Treub, Amsterdam, is president of the newly organized commission for combating rheumatism in the Netherlands. It expects to collect data in regard to rheumatism throughout the country, open consulting dispensaries, and plan for intensive study of rheumatism in some special hospital.——Dr. Wilfred Watkins-Pitchford, director, South African Institute for Medical Research, will shortly retire from active work on account of ill health; he was appointed director in 1921, and in 1916 became chairman of the Miners' Phthisis Medical Bureau, and was, for years, a member of the Natal Medical Council.——Dr. James R. C. Greenless has been apointed head master of Loretto School, Glasgow, Scotland.——Dr. Allan Watt was recently presented with a walnut escritoire and a check on the occasion of his recent retirement from practice in Strathaven, Scotland, after forty-one years.——Dr. T. Heynemann, dean of the medical faculty of the University of Hamburg, announces that a prize will be given for research leading to the construction of a respiration-calorimeter for infants. Competition is restricted to German physicians and medical students.——Dr. C. Schilling of the Institute for Infectious Diseases at Berlin has been elected a member of the malaria commission of the League of Nations.——The *Bruxelles médical* relates that Dr. J. Cantacuzène, professor of experimental medicine, University of Bucharest, met with a serious accident in a Swiss railroad station, losing both his legs.——Dr. Bravo Frias, director of the Madrid Institución de Puericultura, has been awarded the municipal prize for his study of infant mortality in Madrid.——Prof. von Rothe is in charge of the institute for medical motion pictures recently installed at the Charité hospital, Berlin.——The prize offered by the *Archivos Españoles de Pediatría* has been awarded to Dr. A. Arguelles Terán, Madrid, for his work on "Masked Forms of Scurvy in Children."

Government Services

Compensation for Veterans with Arrested Tuberculosis

In the closing days of Congress, legislation was passed awarding $50 a month to ex-service men who have had tuberculosis to a compensable degree which has since been arrested. This legislation was enacted in response to requests of the American Legion and other soldier organizations; they contended that the soldier who once had tuberculosis of a compensable degree was thereafter less robust than previously and that the government should recognize the fact by providing compensation in all such cases. Testimony was presented before the house committee having this legislation in charge to show that ex-service men suffering from tuberculosis were compelled to return again and again to Veterans' Bureau hospitals, even though the disease responded favorably to care and treatment and in many cases the patients were adjudged to have had the tuberculosis "arrested."

Prior to the passage of this new legislation, the soldier with arrested tuberculosis was deprived of all compensation when the medical authorities reported his case under that classification. Now the Veterans' Bureau at Washington has issued regulations definitely fixing the policy of the bureau with regard to this award to ex-service men. The regulations provide that a statutory award of not less than $50 shall be granted, after physical examination of the applicant by a board of three physicians, two of whom shall be physicians of special training in tuberculosis. "Complete arrest" of tuberculosis, which are the words of the statute, is defined in these regulations to mean

> compliance with the definition of arrested tuberculosis in the Schema for Classification approved by the American Sanatorium Association and adopted by the bureau, Nov. 8, 1892; that is, the beneficiary must have shown no constitutional symptoms of tuberculosis for six months; and the expectoration over the same period must have shown bacilli absent; the physical signs must be those of a healed lesion, and the roentgen findings must be compatible with the physical signs

A statutory award of not less than $50 will be granted, without such physical examination, when the records of the Veterans' Bureau in individual cases show

> a characteristic clinical course of formerly active tuberculosis that is now arrested, as, for example, where there has been a period of hospitalization for active tuberculosis with eventual discharge from hospital as "arrested," and where there has been no change in condition since discharge though six months has elapsed since arrest was reached—a rating assigning the statutory award will be made upon the evidence in file

In all other types of arrested cases the board of physicians will make reexaminations, and when it cannot be settled whether "arrested" is present, or when, from physical examination and study of case records, the board fails to determine the actual existence of previous tuberculosis, the beneficiary will at once be referred, through the regional medical officer, to the nearest suitably equipped hospital to clear these questions. Such hospital shall preferably be a U. S. Veterans' Bureau hospital, although other government hospitals may be utilized by the regional office. The regulations provide that in the last mentioned cases all available clinical and laboratory methods, including roentgen-ray examination, shall be employed in this determination. The staff shall at such hospitals thereafter make a written report as to whether or not true tuberculosis has been shown to exist. The regulations then provide for methods of observation and study of each individual case by the staff of such hospitals to determine whether or not the applicant is entitled to the award.

It is estimated that approximately 26,000 ex-service men will be the beneficiaries of this legislation, and that the cost to the government will be $11,231,000.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 7, 1926.

Lunacy Reform

In July, 1924, in consequence of public dissatisfaction arising out of certain cases, a royal commission on lunacy was appointed to inquire into the existing law and administrative machinery in connection with the certification, detention and care of persons who are, or are alleged to be, of unsound mind and to consider the extent to which provision should be made for the treatment without certification of persons suffering from mental disorder. A report of far-reaching importance has just been issued. The commission sat for forty-two days, and more than a hundred witnesses attended, including thirteen who had previously been inmates of institutions. The commissioners state that there is no clear line of demarcation between mental illness and physical illness. The distinction is commonly based on a difference of symptoms and is in practice no doubt convenient, but it has had an undue influence on the development of the lunacy system. The modern conception of mental illness calls for a complete revision of the attitude of society in the matter of its duty to the mentally afflicted. The keynote of the past has been detention, the keynote of the future should be prevention and treatment; but the crucial difficulty is that the special nature of the symptoms of mental illness must in many cases necessitate restraint. Every facility should be afforded to the mentally ailing to submit voluntarily to treatment; but when compulsory detention is unavoidable the intervention of the law should be as unobtrusive as possible and should secure that the patient's liberty is not infringed longer or to a greater extent than his symptoms necessitate in his own or the public interest. In particular, emphasis is laid on the need for providing facilities for the treatment of incipient mental disorder without the necessity of certification, which should be the last resort in treatment and not (as is now too commonly the case) the prerequisite of treatment. The commission has come to the conclusion that the present safeguards against wrongful certification, if properly observed, are adequate. Reference is made to the reluctance of physicians to be involved in the certification of the insane owing to liability to actions at law. The commission finds that the medical profession is undertaking this duty with increasing reluctance and reports that unless some relief is found for the situation without delay a breakdown in the system is inevitable. It accordingly makes recommendations designed to secure further protection for physicians. With regard to detention, after considering the evidence of former patients and after interviewing many patients now under care in institutions, the commission reports that in none of the cases which it investigated was it satisfied on the evidence that improper detention had been suffered. It states that the general evidence which it received on the subject was reassuring. Instances of sane persons being wrongfully certified or improperly detained must be of the rarest occurrence.

The following is a summary of the principal recommendations:

CERTIFICATION, AND TREATMENT WITHOUT CERTIFICATION

1. The lunacy code should be recast so that the treatment of mental disorder should approximate as nearly to the treatment of physical ailments as is consistent with the special safeguards indispensable when the liberty of the subject is infringed. Certification should be the last resort and not a necessary preliminary to treatment. The procedure for cer-

tification should be simplified, made uniform for private and rate-aided cases alike, and dissociated from the Poor Law.

2. Facilities for the treatment of voluntary boarders should be increased, particularly by their admission to public psychopathic hospitals.

3. In the case of an involuntary patient, if there is a prognosis of early recovery, facilities should be provided for treatment without certification for a period of from one to six months under a provisional treatment order.

4. Involuntary patients requiring full certification should be the subject of a reception order made by a judicial authority on two medical certificates.

5. Physicians should receive additional protection. Further attention should be given to mental science in the medical curriculum; and local authorities should be empowered to appoint a certifying physician for their area.

DETENTION

1. A visitor of the board of control should visit every institution and every patient in single care at least twice a year.

2. Local visiting authorities, in addition to the periodic visits already prescribed, should visit at least once a month for the purpose of seeing new patients and their admission documents.

3. Local authorities should be empowered, subject to the approval of the board of control, to make provision for the after-care of patients.

4. The power of a petitioner to direct the discharge of a patient should be subject to further limitation. The duty of health officers in charge of public psychopathic hospitals should be made explicit to apprise the appropriate authority of the recovery of any patient.

5. Special steps should be taken to classify convalescent patients, so that they may receive the sustained observation of the medical superintendent.

CARE

1. Voluntary unofficial visitors of suitable experience should be appointed by the authorities of psychopathic institutions.

2. Notices should be posted in every ward setting out the rights of patients in regard to correspondence and interviews. Letter boxes should be provided in the wards and other suitable places, and opened only by one of the senior officers.

3. For the future, psychopathic hospitals should be designed to accommodate not more than 1,000 patients, and the villa system should be adopted.

Malaria Research in England

The report on the first results of laboratory work on malaria in England, just published, by Col. S. P. James and Mr. P. G. Shute, contains much new and valuable information. The use of infected mosquitoes in the treatment of general paralysis has afforded an opportunity of studying the conditions governing infection. Pure stains of the benign tertian parasite were used, with *Anopheles maculipennis* as the vector. Of 2,630 female mosquitoes used, 530 were found ultimately available for infection of 145 patients, of whom 109 developed the disease. The mortality of *A. maculipennis* kept in artificial "tropical" conditions at 24 C. was high—about 50 per cent during each seven to ten days of life. At 22 C. it was less, but the time taken to become infected was longer, and fresh feeds of blood were needed daily or every other day. If a temperature of 26 C. was maintained with a view to obtaining quick infection, nearly all the mosquitoes died before the salivary glands contained sporozoites; that is, before they became infective. At a low temperature, such as 4 to 6 C., infected mosquitoes lived up to two and one-half months and retained their infectivity. These facts may explain the absence of new cases during very hot seasons, and also, since the oocysts are arrested in development but not killed by the low temperatures, the recrudescence of cases in the spring. Only a small number of persons who suffer from malaria were found infective to *Anopheles*. Some with induced malaria were not infective at any period of their course, and the strikingly infective patient was a rarity, while repeated feeds on an infected patient were needed to infect the mosquito. As this occurred under the most favorable artificial conditions, it is thought probable that "95 per cent. of potential malaria-carrying mosquitoes will never play that rôle." It is concluded that much antimalarial work is wasted effort. It also seems that malaria does not spread unless a number of special conditions are fulfilled, and is probably to a large extent a "household" disease and should therefore be dealt with in houses more than environment. Interesting differences were found between the classic description of benign tertian malaria and the induced disease. The incubation period was usually twelve days, but in many it was ten days; it might be as short as seven or as long as twenty-three. The course is divisible into three stages. In the initial stage, lasting from two to five days, there was gradually increasing irregular fever, remittent at first, intermittent later but without rigors. In the second, or developed stage, in 80 per cent of cases there was for ten days or more a quotidian fever with daily rigor, even if infection had been conveyed by a single bite. In the third stage the type of fever changed from quotidian to tertian. The parasites were not as a rule found in the peripheral blood till the second or third day of fever. In a second attack from a new infection, even after a prolonged interval, the temperature was of the true tertian periodicity. If, therefore, a patient showed a typical tertian temperature from the start, this indicated inquiry as to a history of previous malarial attacks. In the treatment of general paralysis, a rigor on alternate days was followed by greater benefit than a daily rigor. The objective was usually attained by allowing the primary attack to continue for four or five days, then giving from 3 to 5 grains (0.2 to 0.3 Gm.) of quinine to bring about a temporary check, and waiting for a relapse. The temperature then was nearly always of the true tertian character, with rigors on alternate days.

PARIS

(From Our Regular Correspondent)

Aug. 4, 1926.

The Fiftieth French Congress for the Advancement of Science

At this time of year, when the Academy of Medicine and all the learned societies are on vacation, and also large numbers of the physicians, the scientific life is manifested only in the provincial congresses. Lyons was this year the meeting place of the Congress for the Advancement of Science, which, for the last fifty years, has met annually, during the month of August, in some large city. This congress comprises a large number of diverse sections, including a great variety of branches of learning. The medical section did not present a large number of papers, the congress following so closely the "journées médicales" held in Paris, which was marked by an important display of new inventions. Some of the medical papers, however, have a very particular interest. Professor Hugounenq, honorary dean of the Faculty of Medicine of Lyons, sought to explain the laws of heredity by purely physicochemical phenomena—a serious problem under all circumstances but which has become still more troublesome since the appearance of the works of Yves Delage and of Bataillon, who have demonstrated that the impregnation of the ovum in certain species can be accomplished without the action of the spermatozoon, solely through the influence of chemical agents. Hugounenq discussed in this connection the micella of the ovular nucleus. In his opinion, the chemical nature of the molecules is not the essential thing. Hereditary characters are dependent on the varying relations of the molecules to one another, by which different assemblages are constituted. Thus, molecules which are chemically identical but which are grouped in diverse manners constitute different colloids, and, consequently, dissimilar natures. In other words, hereditary influences are the immediate function of the division of the elements, and they have more of a physical than a chemical basis.

Several papers on the technic of radium treatment of cancer and on the roentgen-ray treatment of cutaneous and cutaneomucous cancers are deserving of mention; in fact, the communications on roentgenologic subjects were the most important presented in this section. The paper by Jacques Risler attracted considerable attention. Developing the ideas of Zwardemaeker on the radioactivity of potassium in the blood, he showed that potassium and its salts were especially susceptible to the action of chemical radiations of the sun. Insolated potassium chloride has enabled us to obtain rapid photographic impressions. This establishes the connection between a number of biologic phenomena and the physical influences that are brought to bear on the terrestrial globe. The sun and the radioactive elements of long wave lengths act on the metals contained in the organism and bring them a powerful but variable amount of energy.

More Prompt Aid for Automobilists

The enormous development of automobile traffic along rural highways, which includes tourist cars and commercial trucks, has brought about a frightful increase in the number of accidents, which have now reached a much higher figure than those caused by the railways, even as the result of serious catastrophes. The number of fatal accidents occurring in France now exceeds three a day, while the number of more or less serious accidents, though not fatal, is twenty times as great. Every Monday morning, the newspapers devote half a column to a recital of the accidents occurring the day before; for Sunday, when the conditions are favorable for tourist traffic, produces regularly more fatal accidents than any other day in the week. Almost all these accidents occur in the rural sections, far from inhabited regions; for it is well known that many automobilists, when supervision by the authorities is removed, indulge in speeding, and then, too, in the rural sections, also the farmers with their horse-drawn vehicles pay little attention to traffic regulations. The result is that on the country highways the victims of accidents frequently suffer for want of medical care and treatment, especially if, as often happens, the automobile is demolished or put temporarily out of service by the accident. And even if the contrary is true, there are cases in which the injured person cannot be transported by ordinary means and must first be cared for by a physician, which may necessitate the application of a suitable appliance. In that event, the injured person may be compelled to rely on the kindness of other automobilists who happen along. But such neighborly kindness is becoming more and more the exception, for considerable fear and distrust have been awakened by the fact that recently a group of bandits conceived the idea of simulating an accident. Some of the bandits lay down in the road as if they had been injured, planning thus to induce passing automobilists to stop to render them assistance. When would-be Samaritans stopped their car, the bandits rose from the ground and, together with their companions concealed by the roadside, attacked them, revolvers in hand, and robbed them.

Consequently, various plans are being considered for the organization of some means of providing prompt assistance to travelers who are injured along rural highways. The most recent proposal, which has attracted considerable attention, is that presented by Dr. Vincent of Aix-les-Bains, who is a general practitioner in a mountainous region much frequented by tourists, in which accidents are exceedingly numerous during the summer season. Dr. Vincent has suggested that in each of the 36,000 communes of France a first-aid station be established in some public building—that is to say, in some place where some one would be on duty at all times, even Sundays. At each station there would be a first-aid outfit, including one or two splints for the immobilization and transport of fractured limbs (of the very practical type invented by Professor Rouvillois) and three packages of so-called individual surgical dressings of the type used during the war by the army medical corps, containing aseptic gauze and cotton, water-proof silk, a surgical bandage and safety pins; also, in a special box, the necessary material for temporary hemostasis, a supply of antiseptics, ampules for hypodermic injections (ether, camphorated oil, epinephrine, etc.). The material would be inspected and renewed from time to time by a physician of the locality. An automobile would be always ready, in a garage of the commune, to be dispatched for the injured person and to transport him, after he had been given first aid, to the physician of the neighborhood or to the nearest hospital. As there is, in almost every commune, a committee of the Red Cross Society, such a committee would doubtless be able to furnish a representative to care for such service, at least on Sundays. In case, at the time of the accident, no physician should be available in the locality, it would be his duty to go to the aid of the injured person. In communes having a hospital, the first-aid station would, of course, be located there.

When an accident takes place along the highway, the first cyclist or automobilist who gets knowledge of it will need only to inform the first-aid station of the next commune that he passes through. The expenditures for the dressings and the towing of the automobile would be charged to the injured person, and would usually be paid by some insurance company. In this manner, the equipment of the first-aid station could be constantly renewed. The original cost of the first-aid outfit would be about 700 francs. The municipal council of each commune would have to make that primary outlay. That would amount to more than 25,000,000 francs for the whole country, and, owing to the present stringent financial conditions, it does not seem likely that this excellent project can be carried out in all the communes, in the immediate future. The plan has, however, received the endorsement of the medical associations of the country. These associations are making great efforts to induce the minister in charge of the telephone and telegraph service to reverse his ruling prohibiting Sunday service of these public utilities. It is thought that such a concession would at least improve the situation with reference to Sunday automobile accidents.

A Regrettable Incident

Dr. André Colin, who is an eminent specialist in the mental diseases of children and who conducts a course in the pedagogy of physiology at the University of Paris, has recently reported an unusual experience. He had been delegated to study a number of children who were backward in their school work and gave evidence of early viciousness. The children attended a public school in Suresnes, a suburb of Paris, where the population was made up, in large part, of factory workers. His examination of the children led him to conclude that most of them were heredosyphilitic. He recommended therefore to the municipality to establish a dispensary for the care of such children, where they could be given a series of injections, the nature of which he did not divulge, in order not to violate the right of privileged communication. He commissioned Dr. Tobolowska, a woman physician and one of his pupils, to give the injections (of arsphenamine, as it developed later). One or two slight accidents occurred, whereupon the principal of the school, who took offense at the intrusion of strangers in connection with the care of his pupils, filed a complaint with the prefect of the Seine against Dr. Tobolowska, whom he accused of performing dangerous experiments with the children. The parents of the pupils, whom the principal had no difficulty in arousing, joined in the complaint. A judicial inquiry was opened into the conduct of the woman physician, which involved also Dr. Colin indirectly. Expert witnesses were summoned and the inquiry dragged along for several months, the municipality of Suresnes defending the woman physician and the dispensary that she established. The court recently rendered its decision, which exonerated Dr. Colin and Dr. Tobolowska and set forth that the prescribed treatment was justified and in conformity with the present status of medical science. The prefect of the Seine thereupon removed from office the principal of the school, who had been the author of the regrettable incident.

GENEVA

(From Our Regular Correspondent)

Aug. 7, 1926.

Temperance and Total Abstinence

The temperance movement in Switzerland is of Protestant origin, but the Catholics very soon associated themselves with it. Mgr. Egger in 1895 founded, with the help of Dr. P. A. Ming, the Swiss Catholic League against alcoholism, which at first included moderates and total abstainers. The Catholic total abstainers' league has developed in a very encouraging manner. The Catholic bishops have repeatedly associated themselves with the fight against alcoholism; in 1908 by a collective letter against absinthe; again, in 1923, they issued an appeal for the substitution of free distilling by the extension of monopoly. Since the famous meeting in September, 1877, when the Protestant pastor Louis Rochat of Geneva founded the temperance society of the Blue Cross, the pastors have always occupied a considerable place in this and other organizations. The proportion of abstainers in the free churches is probably greater than that in the national churches though, year by year, the members of the state churches who rally to the temperance cause are more numerous. The Protestant churches are in favor of the fight against alcoholism, but total abstinence and direct entry of the churches into the struggle meet with less enthusiasm. The Swiss churches dislike to enter directly into political and social struggles.

Prizes for Works on Venereal Disease

The French National League against the Venereal Peril offers three prizes as follows: (1) 5,000 francs to the author of the best work on "The Hereditary Syphilitic Psychopathies in Children and Adolescents and Their Influence on Juvenile Criminality." (2) 5,000 francs to the author of the best study on "The Association of Syphilis and Tuberculosis in Osteo-Articular Affections (Pathogenesis, Diagnosis and Treatment.") (3) 20,000 francs to the author of the most important discovery in the domain of venerology during the years 1926 and 1927.

The conditions for the two first prizes (the manuscripts to be anonymous) are: The manuscript must be in French and must never have been published; it must be not only a general review of the subject, but, above all, original work pertaining to new data. Three typed copies, with an index to each, must be sent. Each manuscript must be accompanied by a sealed envelop containing an epigraph with the name and address of the author. The envelops will be opened after the decision of the jury has been made known. The manuscripts for these two prizes are to be sent directly to the office of the league, 44, Rue de Lisbonne, Paris (VIIIe) before Oct. 1, 1928. One of the three copies of the paper will be returned to the author after the decision of the jury has been made public. The league may favor the publication of the papers presented.

For the third prize (20,000 francs), if the jury does not consider any of the discoveries presented worthy, the prize will not be awarded. However, the prize may be divided between the authors of the two best contributions to the subject. The prizes will be awarded in December, 1928.

Life Insurance Periodic Medical Examinations

Following the practice of certain life insurance companies in the United States and England, a continental company, "Vita" by name, began first in Switzerland and subsequently in Belgium, to offer gratuitous periodic medical consultations for its policyholders. Any one carrying a policy of 30,000 francs or over can consult a physician of his choice every three months. He goes to his physician with an order from the company, and the physician informs the company that he has examined the policyholder at the date stated on the company's order, especially in respect of the heart, lungs, blood pressure and urine (sugar and albumin) and has given him all necessary advice. The physician includes his bill, and he and the policyholder sign it together. The company pays this bill, but should treatment be required or the advice of a specialist needed, these are paid for by the policyholder.

Eosinophilia in Neoplastic Disease

Dr. T. Cavour, a former assistant at the Surgical Clinic of the University of Geneva, has been working on eosinophilia in malignant neoplasms. He examined the blood of forty subjects with tumors, benign and malignant. In thirty-two cases of malignant growths, eosinophilia was found in only eleven (34.4 per cent) ranging between 4, 5, 5.5, 6.6 and 10 eosinophils for each hundred white cells. In eight cases of nonmalignant growths, six presented eosinophilia varying between 3.5 and 4 per cent—otherwise, 75 per cent of the cases. There exist many hypotheses—sometimes contradictory—in respect of the function of the eosinophils. Cavour says that the nucleus of the eosinophil, which stains poorly with nuclear reagents, as well as its protoplasm filled with refrangent granulations, are features identical with that of a degenerated cell. But, as Audibert has pointed out, a poor affinity of the nucleus for nuclear stains is also encountered in normal cells. As long as chromatolysis and pyknosis are absent, degeneration does not exist in the cell. Hence, Cavour believes that eosinophilia is not a degenerated element of the blood but represents a living entity elaborating its acidophil granulation. Audibert supposes that the granulations maintain the chemical equilibrium of the blood. The phase of convalescence from infectious processes is accompanied by an intense and favorable eosinophilia. The eosinophils complete the success of the struggle and reestablish the normal reaction of the blood. They are of undeniable clinical value as an element in prognosis. In chronic processes, neoplasms for example, eosinophilia appears at the onset of the process and subsides during the phase of cachexia. The conclusions are briefly that eosinophilia is a defensive action of the organism against certain toxic substances elaborated by neoplastic cells; it has no absolute symptomatologic value in cases of malignant growths, because it is encountered in nonmalignant tumors, in intoxications and in cutaneous affections. Eosinophilia decreases or completely disappears in the last phase of the evolution of the neoplasm (cachexia). Its absence may serve as an element in prognosis.

Pellagra in Switzerland

A case of pellagra that has been under observation at the dermatologic clinic of the University of Geneva is the first case reported from Switzerland. A woman, aged 44, addicted to alcohol, had lesions appear on the hands in early May, 1925. There was acute stomatitis with marked desquamation of the mucosa, and acute superficial inflammation of the vulva with perivulvar and perianal erosions. The labia majora and minora were red and swollen, the internal surface of the minora being covered by a diphtheroid membrane. The dorsal aspect of the hands and interdigital spaces was red and congested, and presented an acute, painful dermatitis. The patient was fairly corpulent, with a somewhat earthy complexion and very apathetic. The pulse was 120; the heart sounds were normal. She complained of colic diarrhea. The tendon reflexes were sharp. The pupils were equal and reacted well to light and in accommodation. The Wassermann reaction was negative. During the second half of May the lesions on the hands improved, and on June 6 they were practically healed. The diarrhea and tachycardia continued. The psychic disturbances became aggravated, the patient at times presenting a true state of mental confusion and several times manifesting suicidal tendencies. June 14, the patient was transferred to the Bel-Air Asylum for the Insane, where it was noted that she walked with difficulty but was calm and made the remark that she was not insane. The patient willingly replied to questions, although in an indirect way, and incoherently. Her memory was greatly impaired, and her appreciation of space and time was impaired. Emaciation and physical decay progressed, and death took place, November 7.

RIO DE JANEIRO

(From Our Regular Correspondent)

July 15, 1926.

Arsphenamine Accidents

Dr. Silva Araujo recently submitted to the National Academy of Medicine some statistics collected in the venereal dispensaries. Up to Aug. 31, 1925, when an inquiry was made in Brazil as to accidents caused by neo-arsphenamine, 308,185 injections had been given in the dispensaries located in the federal district and the various states. Only two deaths were discovered that could be attributed to arsphenamine. From Sept. 1, 1925, to April 30, 1926, 73,117 injections were given in the federal district with no fatal outcome. The result shows, then, one death for each 191,000 injections.

Trophodynamic Theory

Prof. Pimenta Buena has explained at the National Academy of Medicine the fundamentals of the trophodynamic doctrine of function. The biologic equation of life depends on the material constitution of the living creature and environmental factors. The organism is born, lives, becomes sick and dies through the cell. Pimenta Buena's research has enabled him to establish these principles: All structures supplied by the same arterial trunk act as a unit against the other organs even if, among themselves, antagonistic to one another. All local hemic relations are controlled by the separate resistance of each organ, and, therefore, by the individual susceptibility of each organ.

Cardiovascular Syphilis

Dr. G. Londres, in discussing cardiovascular syphilis before the Medical and Surgical Society, pointed out that a historical review shows that at first the only syphilitic lesions studied were cutaneous and mucous. Only much later was attention given to the visceral changes. The rôle of syphilis in cardiovascular diseases received first attention at the hands of Ricord in 1845 The contributions of Lancini, Morgagni and Paré hardly dealt with any but late manifestations. Fournier, however, studied the early changes in the pulse. Even now, a number of authors dwell on the rarity of early changes in cardiovascular syphilis. In Brazil, however, the subject has been studied by a few investigators, such as Clark and Austregesilo, and more recently by da Cunha, who is in charge of the visceral syphilis service at the Gaffrée-Guinle Foundation. Londres described two cases of primary syphilitic pericarditis and the start of the secondary stage. Leredde is wrong in stating that tachycardia is rare in the secondary stage. At the Gaffrée-Guinle Foundation, a rapid pulse is common, reaching as high as 120. This is so typical that when patients present themselves with a healed chancre, and the other signs are not definite, the presence of tachycardia is accepted as a probable sign of secondary manifestations.

Gyganthorincus giga Infection

A case of infestation by *Giganthorincus giga*, a parasite of the pig, was reported to the Medical and Surgical Society recently by Dr. B. Figuereido. A girl, aged 16 years, expelled two male and two female worms, after treatment. The patient suffered from pronounced anemia and all the usual signs of helminthiasis. The disturbances included gastro-intestinal upsets, pain in the stomach, vomiting, restlessness and insomnia. A microscopic study of the feces showed blood and elastic muscular fibers. All symptoms disappeared after the worms were expelled. Dr. G. Gonzaga has found *Gyganthorincus giga* eggs twice among 1,326 fecal examinations.

The Solar Plexus in Membranous Enterocolitis

According to Dr. E. Meirelles, speaking before the National Academy of Medicine, so-called membranous enterocolitis is caused by changes in the solar plexus. Any undue sensitiveness of this structure may start a mucorrheic condition either through direct enterogenous or paraenterogenous pathways. The initial cause may lie in a vagotonic condition or endocrine deficiency. Brain and spinal troubles may also be the underlying factor.

Surgical Treatment of Chronic Glaucoma

The treatment of chronic glaucoma and the significance of this question in Brazil was recently discussed by Dr. G. de Andrade before the National Academy of Medicine. The chronic form of disease is unusually prevalent among the colored people. In the eye service of the General Policlinic, out of 351 patients with chronic glaucoma, 222 were colored and only 129 white, while among 369 with acute and subacute glaucoma, 253 were white and only 116 colored. Lagrange's "fistulizing" method and its modifications have fulfilled their promise. Andrade has tried extensively the three chief methods: those of Lagrange, whose assistant he was in Bordeaux in 1914, of Holth and of Elliot. Elliot's trephining awoke many hopes at first, but later results cooled the earlier enthusiasm, as the frequency of subsequent complications became apparent.

BERLIN

(From Our Regular Correspondent)

July 31, 1926.

The Use of Amalgam for Dental Fillings

Professor Stock, director of the chemical institute of the Emperor William Academy in Dahlem, reported recently on a chronic case of mercurial poisoning that he developed during a twenty-five year period of laboratory work, from which he concludes that amalgam fillings in teeth are injurious to health. The Berlin Gesellschaft für Zahnheilkunde organized a special session for the consideration of Stock's article.

Professor Stock opened the discussion by calling attention to Kussmaul's book, which appeared in 1861, and which dealt with mercurial poisoning occurring in employees of mirror workshops, and with mild habitual mercurialism. The fear of poisoning from metallic mercury has now been forgotten, as grave industrial mercurial poisoning has disappeared. The symptoms of mild mercurialism have, therefore, been little known of late. For twenty years rhinologists had been unable to relieve Stock of the nervous manifestations of mild mercurialism, since they sought the cause of the disturbance *in the nose.* Two years ago, the cause of the condition was found to lie in the mercury content of the air of the laboratory, for, with proper measures, he obtained relief. The air of the laboratory which contained from 0.001 to 0.01 mg. of mercury to 1 cubic meter of air, when breathed for long periods, sufficed to produce mercurial poisoning in Stock and all of his associates. Since the publication of his observations, Stock has received letters from chemists and manufacturers confirming his experiments. Geheimrat Kolle in Frankfort-on-the-Main reported to Stock a case of mercurial poisoning that was caused by amalgam fillings in teeth. These fillings, which have been used in dentistry for more than fifty years, comprised formerly copper amalgam, then later silver amalgam. Whereas the copper amalgam is marketed ready-made, the silver amalgam is prepared by the dentist. The better the dentist is, the less mercury he will employ. Copper amalgam is particularly dangerous, since it decomposes readily and then contains visible globules of mercury. Stock recommended, against violent opposition, that amalgam fillings be removed, because a person suffering from mercurial poisoning is sensitive to small quantities of mercury. Stock cited the case of the Marburg physiologist who had grave symptoms of mercurial poisoning, whose health markedly improved after the removal of the copper amalgam fillings from his teeth. Stock found that good silver amalgam fillings yield only small quantities of mercury, but that poor fillings yield a large amount. He found that the same was true of old amalgam fillings, which are supposed to be harmless. Microscopically, silver amalgam fillings show much unevenness. To be sure, the fillings are covered by saliva, so that in the mouth vaporization is impossible, ordinarily; but laboratory experiments have shown that mercury in dental fillings is exceedingly volatile, and after several decades suffices to cause poisoning. A recent experiment showed that a person who has had silver amalgam fillings in his teeth for a period of three years expired a slight quantity of mercury. There is no essential difference between copper and silver amalgam, although the latter is less dangerous, being slower to act. Stock wants physicians—and especially rhinologists and neurologists—to establish whether neurasthenic and catarrhal conditions may not be traced to bad amalgam fillings. He holds that amalgam fillings should be removed if neurasthenic or catarrhal conditions develop for which the physician can find no cause. Stock suggested that a substitute for amalgam fillings be sought.

In the discussion that followed, Professors Dieck, Schönbeck and Schröder, of the university dental institute, said that the dangers of amalgam fillings had been known for a long time. Experiments, which, however, have not been completed as yet, indicate that amalgam fillings give off mercury only for a few days after they have been applied. Stock, it was asserted, had generalized too much from personal experience and had not taken sufficient account of idiosyncrasies. Professor Schultz, neurologist, stated that a statistical inquiry would be unreliable because neurasthenics were eager to discover some new affection in themselves and would report symptoms of mercurial poisoning if the suggestion was given them. Professor Heller, dermatologist, likewise called attention to the importance of individual disposition in the use of mercury as a therapeutic agent and stressed the fact that mercurial poisoning was almost unheard of when mercury was used along with arsphenamine. There must be, therefore, special but still unknown defense substances in the body. Professor Bruck, laryngologist, referred to the fact that otologists and rhinologists were in the habit of using strong solutions of mercuric chloride for long periods without harm resulting. Professor Joachimoglu, pharmacologist, stated that diagnosis of mercurial poisoning should not be on the basis of symptoms, but on the presence of the poison. Arsenous oxide would produce the same toxic symptoms as mercury. At a session of the Berlin medizinische Gesellschaft, held later, Professor Stock repeated his address; here, too, his conclusions were vigorously opposed.

Increase of Typhoid Fever

Owing to the impairment of the public health service during the war and the postwar period, resulting from various causes; more particularly, on account of the reduction in public appropriations and the lack of health officers, there has been a considerable increase of typhoid over the prewar period. In the majority of cases the source of the epidemics has been the dairies rather than the water supply. The epidemic that developed recently in a small town of the free state Lippe was traced to cheese sold in a grocery, typhoid bacilli having been found in the product. The cheese had been made in a neighboring dairy.

Epidemic in the Flooded Area of Upper Silesia

In a flooded area of the Oder River and its tributaries, in the government district of Breslau, there has been recently an outbreak of a peculiar affection, the cause of which is still uncertain. The disease begins with a rather high fever, and is attended with severe pains in the muscles, a marked feeling of lassitude, attacks of headache, and other symptoms of a severe infection. The temperature reaches sometimes 40 C. (104 F.). The ordinary duration of the disease is five days. Cases have not resulted fatally as yet. Thus far, 250 cases have been reported. Preliminary researches indicate that an insect is the cause of the infection. The disease is said to resemble Papatacci fever, which Austrian physicians have studied in the Adria region. The persons affected with the disease have been living, for the most part, in close proximity to the flooded and afterward swampy meadows. A similar outbreak occurred in the same region, in 1903.

Sentence Imposed on a Professional Faster

The activities of a professional faster in Berlin have inspired imitators in several other cities, and recently one of them was unmasked. Investigation revealed that he was not confining himself to cigarets and water, as was alleged, but was taking, daily, chicken broth, "pepsin wine," "biomalt" and candies. As the result of the exposure, the whole gang was brought to trial. The alleged faster received a penitentiary sentence of ten weeks, while his manager was imprisoned for four months and forced to pay a fine of 400 marks. The man who was ostensibly serving as guard was given a light sentence of one week. The charge brought against the culprits was "getting money under false pretenses." It is thought that this summary action will put an end to such public exhibits.

Marriages

McKinley Homer Crabb, Leonard, Texas, to Miss Mildred Frances Richardson of Honey Grove, July 4.

Vincent J. Shippy, Pulaski, Wis., to Miss Josephine Slupinski of Green Bay, June 29.

Louis Peter Hiniker, St. Paul, to Miss Elizabeth B. Sullivan of Minneapolis, in June.

Albert Gottlieb Gumm to Miss Margaret Blau, both of Paris, Ill., June 12.

Louis A. Friedman to Dr. Della May Weintraub, both of New York, July 1.

Leo Merrill Henikoff to Miss Dorothy Cooper, both of Chicago, June 27.

Roy Mark Greenthal to Miss Jean Mack, both of Milwaukee, July 7.

Deaths

Thomas Hayden Hawkins, Plainfield, N. J.; Bellevue Hospital Medical College, New York, 1873; member of the Colorado State Medical Association; emeritus professor of surgery, University of Colorado School of Medicine; formerly dean, professor of gynecology, abdominal surgery, and midwifery, and president of the board of trustees, Gross Medical College, Denver; at one time on the staffs of the National Jewish Hospital for Consumptives, St. Anthony's, Mercy and the City and County hospitals, Denver; aged 78; died, July 20, of cerebral hemorrhage.

Ancil Martin ⊕ Phoenix, Ariz.; Rush Medical College, Chicago, 1885; past president of the Arizona State Medical Association and the Maricopa County Medical Society; member of the American Academy of Ophthalmology and Oto-Laryngology; formerly secretary of the Arizona State Board of Medical Examiners; on the staff of St. Joseph's Hospital, where he died, August 4 of acute nephritis, aged 65.

Frederick Samuel Mandlebaum ⊕ New York; Bellevue Hospital Medical College, New York, 1889; member of the American Association of Pathologists and Bacteriologists; past president of the New York Pathological Society; formerly on the staff of Mount Sinai Hospital; aged 59; died, August 7, following a long illness.

Burnley Lankford ⊕ Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1903; member of the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons; on the staffs of the Protestant and King's Daughters hospitals; served during the World War; aged 46; was drowned, August 3.

Charles Murray Adams, Williamsport, Pa.; Bellevue Hospital Medical College, New York, 1888; member of the Medical Society of the State of Pennsylvania; past president of the Lycoming County Medical Society; formerly on the staff of the Williamsport Hospital; aged 67; died, recently, of pneumonia.

William Rawlings ⊕ Sandersville, Ga.; University of Maryland School of Medicine, Baltimore, 1875; past president of the Washington County Medical Society; formerly member of the state legislature; proprietor of the Rawlings Sanitarium, where he died, August 1, aged 75, of septicemia.

Henry Welsh Wickes ⊕ Surgeon, U. S. Public Health Service; University of Maryland School of Medicine, Baltimore, 1892; was appointed assistant surgeon in 1894, and commissioned surgeon in 1910; aged 57; died, July 20, at Columbia River Quarantine, Astoria, Ore.

Saxton Temple Pope ⊕ San Francisco; University of California Medical School, San Francisco, 1899; assistant professor of surgery at his alma mater; past president of the San Francisco County Medical Society; aged 50; died, August 8, of lobar pneumonia.

John Warren Achorn ⊕ Pinebluff, N. C.; Medical School of Maine, Portland, 1887; Bellevue Hospital Medical College, New York, 1889; member of the Massachusetts Medical Society; aged 69; died, August 5, at his summer home in Annisquam, Mass.

Mead Moore ⊕ Washington, D. C.; George Washington University Medical School, Washington, 1906; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 60; died, August 3, at his summer home in Gloucester, Mass.

Henry C. Ruhl, Leipsic, Ohio; Pulte Medical College, Cincinnati, 1894; member of the Ohio State Medical Association; formerly mayor of Leipsic, and for many years county physician of Putnam County; aged 61; died, August 7, at Detroit, of heart disease.

Franklin Abbott Dorman ⊕ New York; Medical Department of Columbia College, New York, 1898; formerly on the staffs of the New York Post-Graduate, New York City, Woman's, and Sloane hospitals; aged 53; died, August 6, of heart disease.

William Townes Jones, Ware Shoals, S. C.; Medical College of the State of South Carolina, 1876; member of the South Carolina Medical Association, formerly member of state legislature; aged 73; died, July 22, following a long illness.

William Charles Wermuth ⊕ Chicago; University of Illinois College of Medicine, Chicago, 1889; formerly on the staffs of the Grant, Francis Willard, Passavant and Ravenswood hospitals; aged 63; died, July 27, of heart disease.

Helen Elizabeth Hinton, Shreveport, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1922; member of the Louisiana State Medical Society; aged 37; died, August 7, at the Touro Infirmary, New Orleans.

Robert Bartholow Cunningham ⊕ Cadott, Wis.; Louisville (Ky.) Medical College, 1894; University of Louisville School of Medicine, 1898; aged 54; died, July 4, at St. Joseph's Hospital, Chippewa Falls, of chronic nephritis.

Ira J. Dawson, Somerville, Texas; University of Tennessee College of Medicine, Memphis, 1905; member of the State Medical Association of Texas; aged 52; died, June 25, at Cameron, following an appendectomy .

Edwin Boyle McAllister ⊕ Terre Haute, Ind.; Rush Medical College, Chicago, 1894; past president of the Vigo County Medical Society; aged 58; died, August 8, at the Union Hospital, of cerebral hemorrhage.

Albert Ernest Westbrook, Ashley, Ohio; Cincinnati College of Medicine and Surgery, 1863; member of the Ohio State Medical Association; also a druggist; Civil War veteran; aged 85; died, August 6.

J. A. Griffin, Clayton, N. C.; College of Physicians and Surgeons, Baltimore, 1881; member of the Medical Society of the State of North Carolina; aged 71; died, August 3, of acute dilatation of heart.

Nelson A. Ryon, Bowie, Md.; Howard University School of Medicine, Washington, D. C., 1883; bank president; aged 67; died, August 1, at the Emergency Hospital, Washington, D. C., of nephritis.

Louis Martin Kridel, Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1919; member of the Medical Society of the State of Pennsylvania; aged 30; was drowned, August 8.

John G. Ames, Chicago; University of Maryland School of Medicine, Baltimore, 1881; member of the Illinois State Medical Society; aged 73; died, July 28, at Tulsa, Okla., of angina pectoris.

Thomas M. Rice, Avoca, Ark.; Missouri Medical College, St. Louis, 1882; member of the Arkansas Medical Society; aged 71; died, July 23, at a sanatorium in Hot Springs National Park.

William Elmer Mercer ⊕ Liberty, Ill.; Keokuk Medical College of Physicians and Surgeons, 1906; also a druggist; formerly postmaster of Liberty; aged 48; died, August 2, of heart disease.

Alfred Harvey Black ⊕ Thomaston, Ga.; Tulane University of Louisiana School of Medicine, New Orleans, 1891; aged 57; died, July 27, at a hospital in Atlanta, following an operation.

William Randall Brigham, Dublin, Ga.; University of Georgia Medical Department, Augusta, 1897; member of the Medical Association of Georgia; aged 52; died, July 29.

Samuel L. Brooksher, Fort Smith, Ark.; University of Louisville School of Medicine, 1894; member of the Arkansas Medical Society; aged 58; died, July 13, at Turkey.

Delmer Clayton Tripp, Hopewell Junction, N. Y.; Bellevue Hospital Medical College, New York, 1875; aged 78; died recently, of carcinoma of the cecum and bladder.

Jonas Stewart, Anderson, Ind.; Long Island College Hospital, Brooklyn, 1870; Civil War veteran; aged 83; died, August 4, of acute cystitis and rectovesical fistula.

Fred R. Berry, Kansas City, Mo.; University of Kansas School of Medicine, Rosedale, 1906; aged 51; died, August 2, of chronic interstitial nephritis and myocarditis.

Charles D. Baker ⊕ Rohrersville, Md.; University of Maryland School of Medicine, Baltimore, 1881; formerly a druggist; aged 69; died, August 2, of heart disease.

Russell James Dougherty, Englewood, N. J.; Jefferson Medical College of Philadelphia, 1925; aged 26; died, July 23, at Englewood Hospital, of septicemia.

Theodore Wright Clark, Everett, Mass.; University of Vermont College of Medicine, Burlington, 1892; member of the school board; aged 69; died, July 22.

Samuel J. McGrew, Shelbyville, Tenn.; University of Pennsylvania School of Medicine, Philadelphia, 1881; aged 71; died suddenly, July 19, of heart disease.

Julius Henry Hoelscher ⊕ Chicago; Chicago Medical College, 1885; aged 62; died, July 23, at his summer home at Trout Lake, Wis., of heart disease.

Frederick M. Townsend, New York; Medical Department of Columbia College, New York, 1879; aged 70; died, August 5, following a long illness.

James W. West ⊕ Purcell, Okla.; University of Arkansas Medical Department, Little Rock, 1901; aged 55; died, May 18, following an operation.

George Daniel Walker, Erie, Pa.; University of the South Medical Department, Sewanee, 1906; aged 47; died recently, of uremia and chronic nephritis.

James Francis O'Brien, Bellows Falls, Vt.; University of Vermont College of Medicine, Burlington, 1900; aged 51; died, July 4, of heart disease.

Andrew Quigg Young, Moreland, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1887; aged 61; died, July 24, of chronic nephritis.

Charles Diedrich Van Romondt, Pompton Plains, N. J.; Medical Department of Columbia College, New York, 1872; aged 79; died, August 5.

Walter Raleigh Barnesby, Jr., Washington, D. C.; George Washington University Medical School, Washington, 1907; aged 54; died, August 5.

Edgar Ormsby Mitchell, Newburgh, N. Y.; Medical School of Harvard University, Boston, 1892; aged 62; died, June 26, of cerebral hemorrhage.

Ida Wright Rogers, Chicago; Hahnemann Medical College and Hospital, Chicago, 1884; aged 66; died, July 31, of hypostatic pneumonia.

Harry Clayton Will ⊕ Chicago; Northwestern University Medical School, Chicago, 1892; aged 60; died, August 16, of cerebral hemorrhage.

Franklin Pierce Barnd, Hegins, Pa.; Jefferson Medical College of Philadelphia, 1897; aged 58; died recently, of cerebral hemorrhage.

Alonzo D. Smith, Venice, Calif.; Medical Department of Columbia College, New York, 1867; aged 85; died recently, of cerebral hemorrhage.

Jack Henry Grant, Covington, Ky.; Medical College of Ohio, Cincinnati, 1895; served during the World War; aged 54; died, August 5.

Thomas J. Kelly, Mount Pleasant, Mich.; Saginaw Valley Medical College, 1902; aged 54; died, August 1, of valvular heart disease.

William Jay Harrer, Utica, N. Y.; Baltimore University School of Medicine, 1886; aged 61; died, March 4, of cerebral hemorrhage.

George Schott ⊕ Sioux City, Iowa; Missouri Medical College, St. Louis, 1882; aged 68; died, July 4, of carcinoma of the throat.

Michael P. Finnegan, Minneapolis (licensed, Minnesota, under the Act of 1887); aged 86; died recently, of diabetic gangrene.

Charles Alexander Chambers, Dunkin, Texas (licensed, Texas, under Act of 1908); aged 72; died recently, of paralysis.

Charles Donald Pomeroy, Ogdensburg, N. Y.; Bellevue Hospital Medical College, New York, 1883; aged 62; died, July 31.

Elwin De Witt Robbins, Nashua, N. H.; Michigan College of Medicine and Surgery, Detroit, 1896; aged 64; died, July 23.

Joseph Rufus Smith, Orangefield, Texas; Memphis Hospital Medical College, 1902; aged 45; died recently of pneumonia.

James A. Denney, Chicago; Physio-Medical Institute, Cincinnati, 1879; aged 69; died, July 20, at Santa Monica, Calif.

Howard Douglas Fritz, St. John, N. B.; McGill University Faculty of Medicine, Montreal, Que., 1888; died, in May.

Clarence Greesy Green, Beaver City, Neb.; Jefferson Medical College of Philadelphia, 1888; aged 64; died, May 22.

Robert Percival Jensen, Long Beach, Calif.; Creighton Medical College, Omaha, 1896; aged 51; died, July 31.

Eliza H. Patton, Cleveland; Cleveland-Pulte Medical College, 1906; aged 54; died, August 4, of heart disease.

James S. Quinn, Preston, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1909; died, in May.

Cora E. Cary Talbott, Portland, Ore.; Hahnemann Medical College and Hospital, Chicago, 1882; died, in July.

Jonathan H. Bennet, Farmersburg, Ind.; Eclectic Medical Institute, Cincinnati, 1872; aged 82; died, June 4.

Walter P. Mitchell, Middletown, Ind.; Rush Medical College, Chicago, 1886; aged 64; died, July 2.

The Propaganda for Reform

In This Department Appear Reports of The Journal's Bureau of Investigation, of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other General Material of an Informative Nature

THE SAN-GRI-NA AND SILPH CHEWING GUM FRAUDS

Some Obesity Cures Declared Frauds by the Government

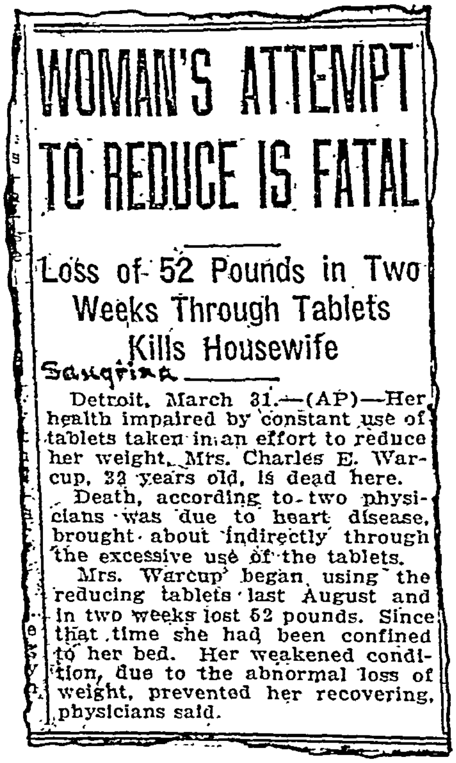
Readers of certain newspapers and popular magazines have for some time past been regaled with the advertisements of what, apparently, were two obesity cures, but which seem to have been, in fact, one. One of the cures was sold as "San-Gri-Na" and was put out by the imposingly-named "Scientific Research Laboratories" and "Madame Elaine." The laboratories were non-existent and so was "Madame Elaine." The other obesity cure was "Silph Chewing Gum," which was sold by the "Silph Medical Company" and "Madame Claire." There was nothing medical about the company; there was no "Madame Claire."

The San-Gri-Na fraud was analyzed in the A. M. A. Chemical Laboratory in 1924 and an article published on the subject in The Journal of November 22 of that year. A briefer report on the same humbug appeared in *Hygeia,* May, 1925. One of the chief advertising assets of the San-Gri-Na fraud was a testimonial by Dr. J. J. Rudolph, a "former health commissioner." J. J. Rudolph lives at 636 Garden Street, Hoboken, New Jersey. He is the same J. J. Rudolph, apparently, that exploited a quack cure for malaria a few years ago known as "Dr. J. J. Rudolph's Antiplasma," sold as a "positive cure" for that condition. For some reason not very obvious, J. J. Rudolph is a member of the Hudson (N. J.) County Medical Society, a member of the Medical Society of New Jersey, and through that has qualified as a Fellow of the American Medical Association.

The facts, as brought out by government investigation and reported by Judge Horace J. Donnelly, Solicitor for the Post Office Department in a memorandum to the Postmaster General recommending the issuance of a fraud order against these fakers, show that both San-Gri-Na and Silph Chewing Gum are enterprises of one W. E. Learned, who had for a manager C. F. Callan. The Scientific Research Laboratories had for its address 1841 Broadway, New York City; the Silph Medical Company was at 9 West 60th Street. These were two entrances to one building, the same offices being used in the operation of both enterprises. There was a marked similarity in composition between San-Gri-Na and Silph Chewing Gum; both contained pokeroot, leptandrin, phenolphthalein and desiccated thyroid, and both, according to the government report, were made by the H. K. Mulford Company of Philadelphia.

In addition to these two obesity cure fakes, Learned had two subsidiary humbugs in the same line: "Dr. Folt's Reducing Soap," which the federal chemists reported was an artificially colored soap made largely from palm oil or a similar fat, and containing a minute amount of iodine in the form of water-soluble iodides, and "Sangra Salts," which was Epsom salt colored. Learned evidently meant to overlook no opportunity of catching those optimistic overweights who think they can reduce without cutting down on the food intake or increasing the amount of exercise. He covered the four methods at present popular in the obesity cure field: tablets for internal administration, reducing soap, reducing chewing gum and reducing bath salts. Seven ounces of Epsom salt that could be purchased for a few cents in any drug store, brought a dollar and a half when sold as an obesity cure by Mr. Learned under the name "Sangra Salts."

The copy of the memorandum of the Solicitor to the Post Office Department to the Postmaster General recommending the issuance of a fraud order, brings out some interesting details regarding this case. Not the least interesting is the fact that one of the attorneys who appeared for these quacks was William H. Lamar of Washington, D. C., a former solicitor of the Post Office Department, and a man who should be and doubtless is thoroughly familiar with the tricks of medical mail-order swindlers. Mr. Lamar had associated with him in this case Mr. E. M. Jeffrey. Messrs. Lamar and Jeffrey attempted to becloud the issue by confining the defense of their client to a technical consideration of the statutes. It appears that very shortly after Learned had been served with copies of the memorandum of the government charges against him, such as is always done in cases of this kind, this quack hurriedly modified his advertising claims; at least, such modifications were claimed by his attorneys, Lamar and Jeffrey. On the basis of these alleged modifications, these attorneys argued that, as their client had abandoned his "old literature," the Postmaster General was deprived of jurisdiction. However, as Judge Donnelly points out, at the very time of the hearing when these technicalities were being raised, the old advertisements were appearing in current magazines that were on the news-stand. Advertisements from *True Story* magazine, *Picture Play* magazine and *Hearst's International Cosmopolitan* were brought by the government as evidence in the case showing that as late as May and June, 1926, these magazines were carrying advertisements for some of Learned's fakes. To quote a few extracts from the solicitor's memorandum to the Postmaster General:



WOMAN'S ATTEMPT TO REDUCE IS FATAL

Loss of 52 Pounds in Two Weeks Through Tablets Kills Housewife

Sangrina

Detroit, March 31.—(AP)—Her health impaired by constant use of tablets taken in an effort to reduce her weight, Mrs. Charles E. Warcup, 32 years old, is dead here.

Death, according to two physicians was due to heart disease, brought about indirectly through the excessive use of the tablets.

Mrs. Warcup began using the reducing tablets last August and in two weeks lost 52 pounds. Since that time she had been confined to her bed. Her weakened condition, due to the abnormal loss of weight, prevented her recovering, physicians said.

At least one woman lost her life from the use of "Sangrina."

"The business being operated under the names Scientific Research Laboratories, Sangrina Company, W. E. Learned, and Madame Elaine will be first described. This business consists in the sale through the mails of tablets known as 'San-Gri-Na,' a soap known as 'Dr. Folt's Soap' and bath salts known as 'Sangra Salts,' each for the cure of obesity. . . . The answer alleges that these tablets [San-Gri-Na] are manufactured by the H. K. Mulford Company of Philadelphia, Pa., in accordance with the following formula:

Solid Extract Phytolacca	1 grain
Potassium Bitartrate (Cream of Tartar)	2 grains
Sulphur	2 grains
Leptandrin	1/16 grain
Phenolphthalein	3/32 grain
Desiccated thyroid	3/32 grain

"It will be observed that the above formula indicates that each tablet weighs 5¼ grains. The evidence shows that an analysis of San-Gri-Na tablets, reported in The Journal of the American Medical Association in 1924, gave the following results:

The tablets weigh 6½ grains each.

Sulphur	2.1 grains per tablet
Cream of Tartar	1.14 grains per tablet
Vegetable extractive and undetermined	1.0 grain per tablet
Calcium carbonate	.7 grain per tablet
Arrowroot starch	.7 grain per tablet
Talc	.3 grain per tablet
Moisture	.2 grain per tablet
Phenolphthalein	.1 grain per tablet

"This analysis did not show iodine in any form or thyroids. A sample of San-Gri-Na tablets, examined by chemists in the Bureau of Chemistry, United States Department of Agriculture, showed the following:

Tablets weigh 6.3 grains each.

Sulphur	1.92 grains per tablet
Cream of Tartar	1.26 grains per tablet
Phenolphthalein	.13 grain per tablet
Thyroid material	.14 grain per tablet
Ext. Phytolacca (Plant Extractive)	.17 grain per tablet
Leptandrin (Alcohol Soluble)	
Calcium Carbonate	.74 grain per tablet
Talc	.23 grain per tablet
Starch (Potato) moisture, adhesive matter and undetermined by difference	1.72 grains per tablet

"It will be observed that, while the formula claims that each tablet weighs 5¼ grains, the first analysis above quoted showed that the tablets weigh 6½ grains, and the second 6.3 grains each.

"There is in evidence a copy of a letter from the H. K. Mulford Company to the Scientific Research Laboratories, dated February 1, 1926, wherein the following statements were made:

> For your records since changing the formula of your San-Gri-Na tablets eliminating thyroid and substituting bladderwrack, our private formula department is now manufacturing San-Gri-Na tablets beginning with formula No. 36440 as follows:
>
> | | |
> |---|---|
> | Solid Extract Phytolacca | 1 grain |
> | Potassium Bitartrate | 2 grains |
> | Sulphur | 2 grains |
> | Leptandrin | 1/16 grain |
> | Extract Bladderwrack | ¼ grain |
> | Phenolphthalein | 3/32 grain in each tablet |
>
> Up until private formula No. 36440 we used 3/32 grain Desiccated Thyroid which has now been changed to Extract Bladderwrack ¼ grain as stated above.

"A further letter in evidence from the H. K. Mulford Company to Mr. E. F. Callan of the Scientific Research Laboratories, dated February 18, 1926, showed that the tablets were being manufactured with bladderwrack instead of thyroid. A telegram from the H. K. Mulford Company to Mr. Jeffrey of counsel in this case, dated May 6, 1926, in evidence, reads as follows:

> Order for San-Gri-Na tablets containing bladderwrack was canceled only experimental tablets delivered. San-Gri-Na tablets have always contained thyroids.

"In the second Mulford letter, above referred to, Mr. Callan was advised that the substitution of bladderwrack in the place of thyroids in the San-Gri-Na tablets will give equally satisfactory results 'without producing palpitation, extreme nervous irritability, etc., occasionally attendant where evidence of hyper-thyroidism exists.' From this correspondence, it appears that the promoters of this enterprise were informed by their manufacturing chemists that the administration of thyroid by their tablets might be attended with harmful results."

The memorandum then quotes some of the advertisements for San-Gri-Na and comments on the advertisements thus:

"The evidence shows, and I so find, that the representation in the first above quoted advertisement, to the effect that San-Gri-Na is a new French discovery, is false and fraudulent. The evidence before me shows that the ingredients in the San-Gri-Na preparation have long been known in the medical profession, and that there is nothing new in this combination. The evidence shows that the 'Madame Elaine,' referred to in the advertisement, is an employee of the promoters of this scheme, her true name being Helen Masten.

"The representation that 'no matter how fat you are or how many things you have tried before, now you can be relieved' is a false pretense. The promoters of this scheme well know that there are other preparations similar to San-Gri-Na on the market. Their own preparation Silph Chewing Gum, sold under the name of the Silph Company from a different street address from that employed in the sale of San-Gri-Na, is practically the same preparation as San-Gri-Na. Persons who have tried that preparation and found it worthless would be induced by this representation to try San-Gri-Na.

"The story respecting 'Madame Elaine,' set forth in the above advertisement, has been eliminated from the proposed so-called 'new' literature. The representation that there is something secret or mysterious respecting the San-Gri-Na preparation is false.

"Purveyors of anti-fat cures seek to fill a demand from the lazy, obese public for some simple preparation to remove fat, without any effort on the part of the sufferer incident to strict diets, change of habit and exercise. They realize that the ordinary obese person likes to eat and that such persons abhor diets. Accordingly, in their advertising and literature, the prospective purchaser is advised that he may eat all he wants. In the above quoted advertisements, he is cautioned against 'weakening' himself with diets and tiring himself with exercises.

"However, after the fat person purchases San-Gri-Na he finds enclosed in the package of tablets a little booklet containing, among other things, 'General Instructions' as to the treatment. He is first told to clean out the bowels thoroughly using 'Veritables French Laxative Pellets' sold by the Sangrina Company for two days before starting the San-Gri-Na. He is also told to use these Pellets regularly two or three times a week thereafter. He is cautioned not to use any other laxative, as these pellets 'will not interfere with the ingredients in 'San-Gri-Na.' This representation is calculated to deceive in that the pellets consist of aloes and cascara, ordinary laxatives, well known to laymen. Other ordinary laxatives universally used could be taken by persons taking San-Gri-Na without interference with the ingredients of that preparation. The obese person who has purchased San-Gri-Na on representations that the taking of the treatment is 'simple' and 'easy' also discovers in the 'General Instructions' accompanying the package that upon awakening in the morning he should take a full glass of warm water in which he is to squeeze the juice of one lemon."

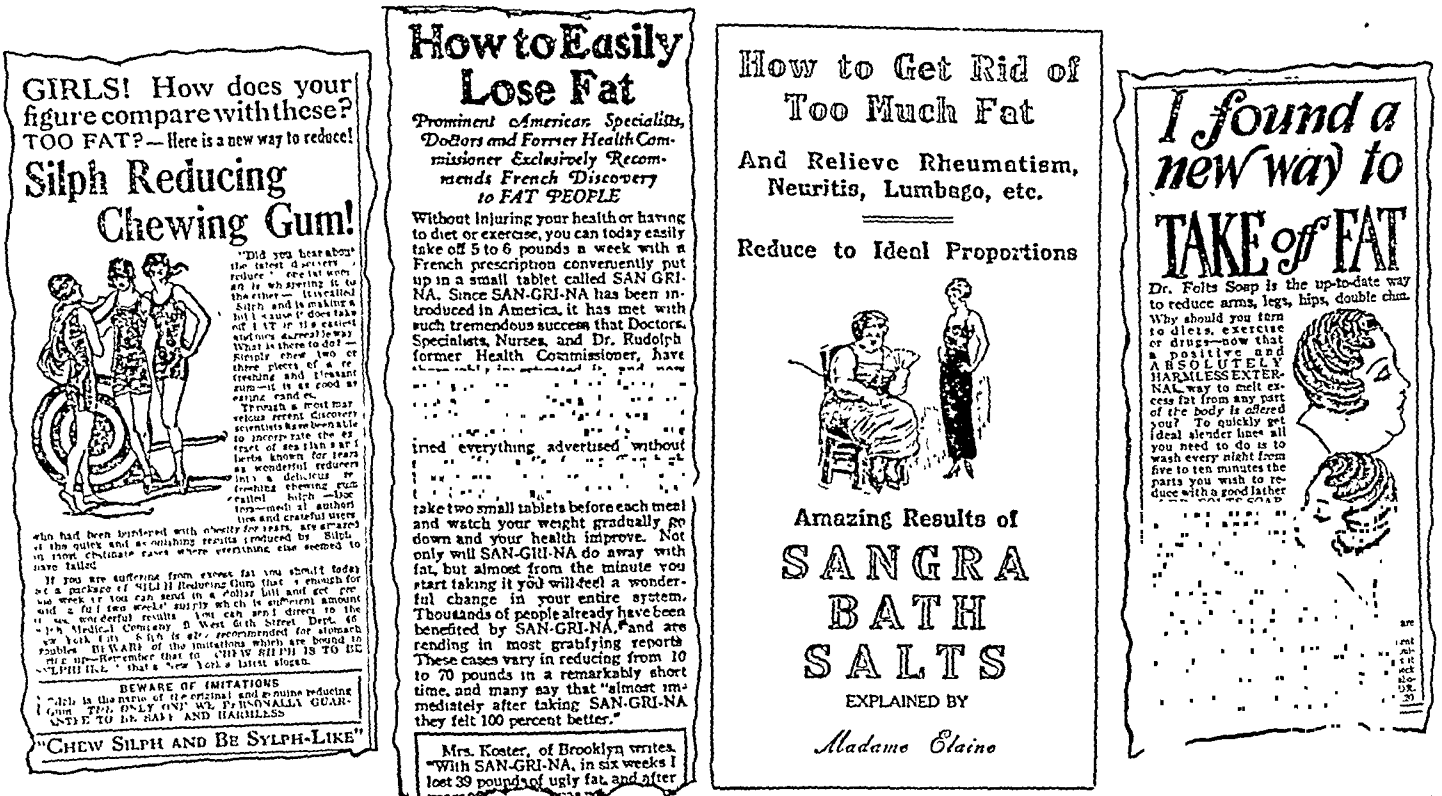
Following this, the memorandum discusses briefly the other two fakes, Sangra Salts and Folt's Soap, and then takes up for consideration Silph Chewing Gum; the Solicitor shows that the only difference between Silph Chewing Gum and San-Gri-Na is the trade name and a slightly different formula. The formula for Silph Chewing Gum, as admitted by Learned was:

Solid Extract Phytolacca	½ grain
Extract Bladderwrack	1 grain
Extract Leptandrin	1/16 grain
Pepsin	1/16 grain
Pancreatin	1/16 grain
Thyroid	⅛ grain

It, of course, contained chicle and sugar as a base. Although the stuff admittedly contained thyroid, the solicitor's memorandum brings out the fact that an advertisement for Silph Chewing Gum appearing in magazines for May, 1926, contained the statement: "Does not contain thyroid or any dangerous drug." The memorandum brings out further that, while the Silph Chewing Gum advertising declares that it is unnecessary for the purchaser to diet, yet after the preparation has been purchased, the victim finds that a diet is recommended. It is brought out, too, that the "Madame Claire" to whom prospective purchasers were urged to write, did not exist.

From the standpoint of business morality and the responsibility of publishers to the public, it is worth noting the fact brought out in connection with this scheme to defraud, that both San-Gri-Na and Silph Chewing Gum were advertised in about 400 newspapers and magazines. Further, that out of the gross receipts of one-half a million dollars—$500,000—which Learned took in annually, he expended over $300,000 in advertising. Once more it should be emphasized that the newspaper and magazine publisher of easy advertising virtue makes more money out of defrauding the public in medical swindles than the medical swindlers themselves, and yet runs absolutely no risk of legal reprisal. The solicitor's memorandum closes thus:

> "At the time the citations in these cases were delivered by the Postmaster at New York, N. Y., namely, April 2, 1926, that official reported that approximately 1,500 pieces of mail were being delivered daily to the names employed in the Silph business, and a like number were being delivered to the names employed in the San-Gri-Na scheme.
>
> "The evidence before me shows, and I so find, that the schemes being operated under the names set forth in the caption hereof are ones for obtaining money through the


GIRLS! How does your figure compare with these?
TOO FAT?—Here is a new way to reduce!
Silph Reducing Chewing Gum!

BEWARE OF IMITATIONS

"CHEW SILPH AND BE SYLPH-LIKE"

How to Easily Lose Fat

Prominent American Specialists, Doctors and Former Health Commissioner Exclusively Recommends French Discovery to FAT PEOPLE

Without injuring your health or having to diet or exercise, you can today easily take off 5 to 6 pounds a week with a French prescription conveniently put up in a small tablet called SAN GRI-NA. Since SAN-GRI-NA has been introduced in America, it has met with such tremendous success that Doctors, Specialists, Nurses, and Dr. Rudolph former Health Commissioner, have

tried everything advertised without

take two small tablets before each meal and watch your weight gradually go down and your health improve. Not only will SAN-GRI-NA do away with fat, but almost from the minute you start taking it you will feel a wonderful change in your entire system. Thousands of people already have been benefited by SAN-GRI-NA, and are sending in most gratifying reports. These cases vary in reducing from 10 to 70 pounds in a remarkably short time, and many say that "almost immediately after taking SAN-GRI-NA they felt 100 percent better."

Mrs. Koster, of Brooklyn writes, "With SAN-GRI-NA, in six weeks I lost 39 pounds of ugly fat, and after

How to Get Rid of Too Much Fat

And Relieve Rheumatism, Neuritis, Lumbago, etc.

Reduce to Ideal Proportions

Amazing Results of
SANGRA BATH SALTS
EXPLAINED BY
Madame Elaine

I found a new way to TAKE off FAT

Dr. Folts Soap is the up-to-date way to reduce arms, legs, hips, double chin.

Why should you turn to diets, exercise or drugs—now that a positive and ABSOLUTELY HARMLESS EXTERNAL way to melt excess fat from any part of the body is offered you? To quickly get ideal slender lines all you need to do is to wash every night from five to ten minutes the parts you wish to reduce with a good lather

Reproductions (greatly reduced) of typical advertisements of "San-gri-Na," "Silph Reducing Chewing Gum," "Sangra Bath Salts" and "Dr. Folt's Soap."

mails under false and fraudulent pretenses, representations and promises.

"I therefore recommend that a fraud order be issued against the names set forth in the caption hereof."

On June 24, 1926, fraud orders were issued against the Scientific Research Laboratories, Sangrina Company, W. E. Learned, Madame Elaine, Silph Medical Company, Silph Company, Madame Claire, and their officers and agents as such. It will be interesting to see whether any of these frauds—"San-Gri-Na," "Sangra Salts," "Folt's Reducing Soap" or "Silph Reducing Gum"—will continue to be sold through the drug stores of the country. Legally, there is nothing to prevent this means of evading the government's action. Obesity cure swindlers cannot be attacked under the Food and Drugs Act, because obesity is not looked upon as a disease, and, therefore, products sold for the treatment of obesity do not come within the scope of law's definition of drug. But even if obesity cures fell within the scope of the national Food and Drugs Act, the exploiters of these fakes would still be perfectly safe from prosecution if they did as most "patent medicine" fakers do—confined their lying claims to newspaper advertisements and circulars and said as little as possible about the product itself on or in the trade packages.

Correspondence

COLON FILLING STATIONS

To the Editor:—Chicago has long been regarded by "twilight zone" practitioners as a lucrative and well protected hunting ground. Now we are being visited and exploited by the "colon therapists." During the last two years, New York, Boston, Philadelphia, Pittsburgh and even Baltimore have had their colonic "sewers" catheterized, irrigated and bug-implanted. Now Chicago must take its place in the ranks of the "autointoxicated," the "pepless," the "bugless" and the "pale and pasty."

"Colonic therapy" has had an interesting and not unenlightening history. The Metchnikoff "chemists" gave it birth, but not until Sir Arbuthnot Lane fostered it with the vivid fanaticism of a "Billy" Sunday did the "poisonous cesspool" of man parade in accepted medical society. The disappointments that followed the myriad resections, "short-circuits" and entro-anastomoses advocated by Lane and his co-workers permitted this "new birth" therapy to languish, and up to three years since, the defenseless colon—to whose vagaries all ailments from dandruff to pernicious anemia have been ascribed—secured a well merited rest.

But not for long: a New York Turkish bath attendant took up the gage, "invented" a special steel table, and devised an assortment of "colon tubes" of length sufficient to irrigate all the way from Dan to Beersheba, *if necessary*. And, of course, tables, tubes and modus operandi were available to all who had the cash and who wished to embark on the career of "colon therapist."

The ex-Turkish bath rubber, overnight, became a "Professor," established in Gotham an elaborate "colon laundry," circularized the reputable medical profession with a costly brochure (filled with pictures and pseudo-scientific rubbish), and gave "courses" in the art of "cesspool" drainage.

It is needless to say that, among the chiropractors and the osteopaths, "colon therapy" came as "manna in the desert." At present, on our Eastern littoral, no "up-to-date" cultist is without the ex-Turkish bath "Prof's" table, tubes and sweet-smelling "lavage fluid."

Until recently, Chicago's rich field has been left untilled; now "The Chicago Institute for Colonic Therapy" is in our midst, with a full equipment of "special apparatus and colon tubes," "freshly prepared broth cultures of *Lactobacillus acidophilus*," a "consulting radiologist" and the promise to its less fortunate (or adventurous) medical brethren to treat all "in a strictly ethical manner" and "return cases to the physician, when anything except colon therapy is required. All this information neatly printed in gold and blue on first quality bristol board and mailed free to those of us who are not up to date in the sciences and the arts.

This "new" colon therapy rests on no basis of fact, is employed by none of the country's leading gastro-enterologists, and is permitted in no institution of recognized standing. But, Chicago must fall in line as a "progressive" and have its "Institute." Barnum was right!

Frank Smithies, M.D., Chicago.

EPIDEMIOLOGY OF POLIOMYELITIS

To the Editor:—From time to time the possibility of milk-borne epidemics of poliomyelitis has been considered. In corroboration of statements made in the article by Dr. Aycock (The Journal, July 10), I wish to report the analysis of sixty cases of poliomyelitis handled by the Los Angeles County Health Department in 1925. There were thirty-two males and twenty-eight females, with ages as follows:

MALES		FEMALES	
Under 1 year	2	Under 1 year	2
1- 3 years	13	1- 3 years	12
4- 7 years	10	4- 7 years	5
8-15 years	4	8-15 years	8
16-20 years	3	16-20 years	0
Adults	0	Adults	1
	32		28
			32
		Total	60

It will be noticed that there were 6⅔ per cent under 1 year, 40 per cent between 1 and 3 years, and 73 per cent of the total number under 8 years of age, proving that in this series the youngest children were by far the more susceptible but that a small percentage of adults and older children may contract the disease.

There were four families with two cases, and in each one of these the onset was so close together that it furnishes more evidence that the suggestion made in Dr. Aycock's article is correct: that they were not secondary cases but probably infected at the same time. The onsets were as follows:

T. O., aged 1½, onset, April 6; her sister F. O., aged 3, onset, April 10.

V. K., aged 3, onset, May 15; her sister K. K., aged 2, onset, May 17.

R. R., aged 3½, onset, June 9; his brother A. R., aged 4½, onset, June 9.

R. E., aged 17, onset, June 20; his brother H. E., aged 20, onset, June 25.

In obtaining the history I felt that, at times, the day of onset is given a day or two later than it might have occurred, especially in those cases in which the onset is not abrupt.

The families obtained their milk from twenty-seven dairies, had their own cow in six cases, and used condensed milk in two cases. Of the dairies, nine selling pasteurized milk sold to twenty-seven different families, and eighteen selling raw milk sold to twenty-five different families.

In those cases in which the dairy served more than one family, the onsets of the cases were so far between that it would seem that it was a coincidence and in no case would it seem possible that the disease was milk borne.

There were of those patients living in the same families 126 adults and ninety-eight children without any secondary cases with the exception of those four instances in which there were two cases in one family and, as mentioned before, it did not seem that they could be secondary cases in view of the period of incubation.

J. L. Pomeroy, M.D., County Health officer.
J. W. Robinson, M.D., Diagnostician,
Los Angeles County Department of Health.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MOUTH WASH FOR LEAD WORKERS

To the Editor:—I understand that a mouth wash is in use by lead workers for the purpose of precipitating soluble salts of lead to an insoluble form. The formula for this mouth wash is not available in ordinary literature. Will you kindly forward a copy of any formula that has proved valuable for this purpose?

J. W. Gardam, M.D., Kearny, N. J.

Answer.—The preparation frequently used is a dilute aromatic sulphuric acid (5 drops of aromatic sulphuric acid to a wineglass of water). More frequently this aromatic sulphuric acid in the same proportions is taken internally diluted in fresh lemonade or lemonade made from citric acid and lemon syrup. A drink made of magnesium sulphate in lemonade was formerly used in lead works also.

We feel called on to point out that neither of these procedures affords a very satisfactory method of preventing lead poisoning. Lead poisoning may arise from lead fumes or lead dusts entering either the lungs or the stomach by way of the nasal passages, as well as from lead entering the body orally. The opportunities for combating the hazard of lead through any mouth wash appear to be negligible. On the other hand, the use of such drinks or washes may lead to a sense of false security.

Following the ingestion of sulphuric acid lemonade or dilute sulphuric acid, lead sulphate is probably formed. This lead salt is believed to be less soluble than such others as the carbonate, acetate or chloride. However, the gastric and pancreatic juices tend to reconvert the sulphate into the more soluble forms. Besides, if by any chance some of the lead that has been changed to the sulphate form by the use of this dilute sulphuric acid is not reduced by the gastric or pancreatic juice, the worker is still not protected by the fact that he has in his intestinal tract the sulphate of lead. Though lead sulphate is believed to be far less soluble than white lead (basic lead carbonate), it is still sufficiently soluble and absorbable to produce plumbism.

We are disposed to regard as more efficacious the ingestion of fresh milk at meals and between meals, using about one quart of milk daily for every exposed worker. The theory supporting this is that the lead salts which may be in an insoluble form are transformed to a soluble form by the hydrochloric acid found in the gastric juice. The milk will neutralize any excess of hydrochloric acid by the "carbonate of milk and will fix it by the milk protein." (Carlson, A. J., and Woelfel, A.: Hygiene of the Painters' Trade, bull. 120, U. S. Bureau of Labor Statistics, 1913). There will therefore be no excess hydrochloric acid to dissolve the lead salt, and poisoning will be less imminent. In addition to lessening the absorbability of lead, milk is especially helpful in rendering harmless the lead already stored in the skeletal system.

All things considered, the use of any acid mouth wash or acid lemonades is not regarded with any great favor.

SODIUM PERBORATE IN PYORRHEA

To the Editor:—Can you tell me who is responsible for the introduction of sodium perborate in the treatment of pyorrhea alveolaris?

David T. Smith, M.D., Ray Brook, N. Y.

Answer.—Sodium perborate is used in dental infections when the responsible organisms are those of the anaerobic group of Vincent. This drug is particularly valuable in the acute or early stages but is of little influence when used in chronic Vincent's infection. Its value is attributed to the formation of hydrogen peroxide with the subsequent slow but constant liberation of oxygen when it is held in the mouth in solution.

Informed dentists do not confuse pyorrhea (so called) with Vincent's infection. The clinical picture is distinctly different in each.

Dr. Paul R. Stillman, New York, was one of the first to advocate its use in the literature of dentistry. "Without being the least certain, but from recollection only," he says, "I should attribute my own knowledge of its value to my colleague, Professor John Oppie McCall, New York University School of Dentistry."

LIME INFILTRATION OF THE CORNEA

To the Editor:—In Queries and Minor Notes (The Journal, August 7) is a discussion of lime infiltration of the cornea. Nothing is said about the use of neutral ammonium tartrate, as discussed by Drs. Otto and Hans Barkan of San Francisco in The Journal, Nov. 15, 1924.

This letter is written only because I consider the use of neutral ammonium tartrate in lime burns of the eye a milestone in industrial ophthalmology. It is so far superior to any other treatment I have ever used that my entire experience has been altered in these frequently disastrous cases.

G. Henry Mundt, M.D., Chicago.

HELIOTHERAPY IN PULMONARY TUBERCULOSIS

To the Editor:—In The Journal, June 12, the reviewer of "Intestinal Tuberculosis," by Brown and Sampson states that certain pulmonary processes react so severely to ray treatment as to make thorough heliotherapy of a concomitant extrapulmonary focus impossible. I have long understood this to be true but have been unable to find literature on it. Will you be good enough to give me references on this subject? If published, please omit name and address.

M.D., Pennsylvania.

Answer.—This letter was referred to Dr. Brown, who writes:

"Our experience has not led us to believe that rather intensive heliotherapy, using chiefly the artificial ultraviolet ray treatment, of extrapulmonary disease has any effect whatever on the lung. In fact, many of the patients with advanced pulmonary tuberculosis had intestinal tuberculosis as well. At times we do not protect the lungs from these rays but treat the rest of the body intensively. The only thing we notice is that the lungs apparently get better as the intestinal symptoms improve. We have had patients who had hemoptysis, shortly after starting this artificial heliotherapy. We suspended the treatment for two or three weeks and then began again without any ill results. These patients make an apparent recovery from the intestinal tuberculosis.

"We also have treated by roentgen rays many of the glandular lesions and at times some of the abdominal conditions, such as intestinal tuberculosis. Here, of course, we protect the lungs and get no reaction from them. In fact, we have one person under our care at present who has had a most intensive roentgen-ray treatment of the bones of the pelvis for a malignant growth. As far as I can make out, she has never had any pulmonary reaction. I do not feel that you need consider the pulmonary focus in treating extrapulmonary disease by heliotherapy."

ACTION OF MERCURIC SALICYLATE IN FAT ON HYPODERMIC NEEDLE

To the Editor:—I am using a suspension of mercuric salicylate in goose oil. Will it injure in any way the metal parts of my record syringes? Please omit name.

M.D., Baltimore.

Answer.—It is very unlikely that mercuric salicylate in a neutral fatty base would affect the metal parts of a syringe. No effect was observed on a piece of bright copper or on a nickel plated needle which were immersed in different tubes of mercuric salicylate in vegetable oil for twenty-four hours. On the other hand, a piece of bright copper was attacked sufficiently by a saturated solution of mercuric salicylate in water to give the solution a green coloration in twenty-four hours. No change was noted in a nickel plated steel needle after twenty-four hours' immersion in saturated mercuric salicylate solution.

LIGHT-HEADEDNESS IN NEPHRITIS—CONTRAINDICATIONS TO COFFEE

To the Editor:—Is there any remedy for the light-headed sensation so commonly complained of by those who have chronic interstitial nephritis? Also, is it the caffeine or the purine bodies contained in coffee that make it so objectionable in the nephritic diet? Kindly omit my name and address.

M.D., Pennsylvania.

Answer.—No definite single remedy can be suggested for the "light-headedness," as it may be due to a number of different conditions, each of which would require different treatment. Thus, if it is due to high blood pressure and toxemia, several days of a milk diet plus catharsis might relieve it. If, on the other hand, it is due to anemia, eggs, green vegetables and iron medication would be indicated. Mild nerve sedatives like bromide or carbromal might be of some comfort in either case.

There is no objection to coffee or tea as far as the kidney is concerned. Caffeine is indeed, at times, a useful diuretic. It is *only* when there is insomnia, high blood pressure and cardiac irritability that caffeine may be objectionable because of its tendency to increase these disturbances.

COMPLICATIONS DURING CHILDBIRTH

To the Editor:—A primipara, aged 24, had irregular labor pains every two minutes, lasting thirty seconds, all day. At 9 p. m., examination showed the cervix dilated to the size of a half dollar. At 1 a. m. in the morning she was given 8 mm. of ergot by mouth, and at 2 a. m. labor pains ceased. About 10 a. m., she started having labor pains again, every minute, lasting twenty and forty seconds; at noon the pains stopped until 8 p. m., when they returned again. This time the pains were strong every minute, lasting thirty seconds and being somewhat irregular. Chloral and bromides were administered, also ether inhalations. The patient was restless and weak, had several fainting spells, would go to sleep for a moment, and arise screaming that something had torn loose. At 10 p. m., the same day, she was given 10 mm. of ergot hypodermically, and about midnight pains stopped. She had no more pains till 1 p. m. the third day, when the pains gradually grew more severe. Examination showed that the cervix was dilated to about the size of a dollar, with a left occipito-anterior presentation. About 6 p. m., the same day, the head was delivered. Pains stopped after the head was delivered and the patient did not have any pains for thirty seconds. The face of the fetus turned blue and black; the shoulder was delivered and then the extremities. The baby was asphyxiated, blue and cold, and after artificial respiration, hot and cold applications, the baby started breathing. The baby weighed 8¼ pounds (3.8 kg.). The patient had a good postpartum recovery. Three weeks after the delivery, the mother had several attacks of chills and a fever of 104 F. Both mammary glands were painful; there was a hard mass over the right mammary gland. What is your explanation for these irregular pains? Why did she have such severe pains and fainting spells without dilatation of the cervix? Can you explain to me the cause of fever and chills three weeks after childbirth?

M.D., Chicago.

Answer.—The description of the labor pains and the remarks concerning the actual delivery indicate that the uterine activity in this case resembles closely that of tetanic contractions, either generalized or localized in one part of the uterus. In the past, this was a frequent occurrence because of the widespread use of ergot. In the present case, while ergot was not the primary cause, it most likely aggravated the condition. On both occasions when ergot was administered, pains stopped soon afterward and this agrees with the fact that frequently the end result of the administration of ergot is exactly the opposite of what is anticipated, because the uterus, instead of alternating between contraction and relaxation, remains firmly contracted. (Ergot should never be given before the uterus is empty except in cases of abruptio placentae.) In most cases of tetanus uteri the patients have an unstable nervous system or definite constitutional maldevelopment; but irritation of the cervix, such as attempts to dilate it forcibly, may produce the condition. Mechanical intervention can also produce tetanic contractions of the uterus.

The fainting spells and sensation of something tearing may have been due to irritation and injury of the peritoneum over the lower part of the uterus, and also to the severe pain associated with the lack of cervical dilatation.

The treatment in cases like this should be directed toward securing rest and sleep. Drugs, such as solution of pituitary and ergot, given to stimulate uterine activity, usually make matters worse. The patient should be given a prolonged hot bath, then a hot drink, 16 mg. of morphine hypodermically, and 4 Gm. of sodium bromide or 2 Gm. of chloral hydrate by rectum. Following this procedure, most patients sleep soundly for four or five hours, and, after they awaken, uterine contractions usually progress in a normal manner. In the cases in which the uterine activity remains irregular after a refreshing sleep, it is advisable to hasten dilatation of the cervix by packing the cervix and vagina with gauze saturated with boroglycerin or by the use of a colpeurynter. The moral courage of the patient must be maintained. It is usually inadvisable to administer an anesthetic long before the actual delivery, because most patients demand more and more of the anesthetic with the result that the uterine contractions weaken and operative intervention often becomes necessary.

From the meager information given, it would appear that the chills and fever that occurred three weeks after delivery were due to a breast infection. However, pyelitis and other extragenital infections must be borne in mind.

"FILLING THE PHYSICIAN'S PRESCRIPTION"

To the Editor:—In an article in one of the recent issues of The Journal, attention was called, by the author of the article, to the variations found on quantitative analyses of medicines obtained in various drug stores. These medicines were obtained on prescription. Under separate cover you will find two 1 ounce solutions each containing 6 drachms of potassium iodide—one made from Squibb's preparation and one from Powers and Weightman's product. You will note the difference in solubility. Perhaps this (drug impurity) explains many of the variations recorded in the article to which reference is made.

W. M. D., M.D., Scranton, Pa.

Answer.—The Association's Laboratory reports that one bottle contains potassium iodide and the other bottle contains potassium bromide. The discrepancy, therefore, is not attributable to impurities, but probably to the fact that the dispenser inadvertently got hold of a container which, one might presume from alphabetical arrangement, would be located nearby. In this case the consequences fortunately would not be serious, but the censure of carelessness is just as applicable as if the mistake might have been the cause of toxic results.

SOLUBILITY OF MERCUROCHROME-220 SOLUBLE

To the Editor:—1. Please advise me concerning the solubility of mercurochrome in alcohol; also in water, and whether it is soluble in an aqueous alcoholic solution. 2. At what percentage solution has alcohol its greatest antiseptic value?

J. D. Riley, M.D., El Paso, Texas.

Answer.—1. Tests made over a year ago in the American Medical Association Chemical Laboratory showed that both the sodium salt (mercurochrome-220 soluble) and the anhydride form (mercurochrome-220) are practically insoluble in alcohol U. S. P. (95 per cent), just sufficient being dissolved to color the alcohol but not enough to be of therapeutic importance. Mercurochrome-220 soluble is readily soluble in water, however, and the solubility in hydro-alcoholic solutions varies according to the ratio of alcohol and water present. Scott and Hill report that they use a solution prepared by dissolving 2 Gm. of mercurochrome-220 soluble in 35 cc. of water and then adding, while stirring, 55 cc. of alcohol U. S. P. and 10 cc. of acetone (*J. Urol.* **14**:139 [Aug.] 1925).

2. From 70 to 80.

SPAHLINGER TREATMENT FOR TUBERCULOSIS

To the Editor:—What is the status of the Spahlinger method, which has been mentioned in rather unfavorable terms in The Journal, but concerning which there still seems to be some enthusiasm abroad? Please omit my name.

L. N. P., Illinois.

Answer.—From time to time M. Spahlinger has given out enthusiastic reports from his Geneva Hospital. Because of the favorable newspaper comment, more particularly in England, concerning this product a report was made on it by the Science Committee of the British Medical Association. In the statement of this committee published last spring (*Brit. M. J.* **1**:755 [April 24] 1926), the history of the preparation was summarized and the committee strongly emphasized that it cannot endorse "this or any new method until after a full and independent test." The committee formulated certain conditions which should be fulfilled by such vaccines as those prepared by Spahlinger, and concluded that: (1) The remedy is secret and the exact methods of preparation have never been fully published; (2) no investigations carried out under strict experimental conditions which afford direct and convincing evidence of curative action have been published; (3) the scheme suggested by the committee gives a full opportunity of testing the value of the treatment without any public disclosure of the methods of manufacture.

In a recent review of the Spahlinger Method (*Prescriber,* August, 1926, p. 304) the editor states that:

> An impartial consideration of these reports leads one to the following conclusions: 1. Those who have visited Geneva invariably return with a favorable opinion of the treatment. 2. At the same time the attitude of these observers is purely one of enthusiasm; no one seems to have presented any scientific facts or logical data, the best that is reported being "wonderful cures." 3. In spite of urgent appeals by lay persons and by the public press, Spahlinger seems still to be waiting for money to continue his work. 4. One cannot help expressing surprise that Spahlinger has not adopted the very obvious expedient of converting *himself* into a limited company. The public rushes headlong into schemes of a much less worthy character and cheerfully parts with its money on shares in doubtful rubber plantations and still more doubtful gold mines —surely such an appeal would have a quick response. 5. There is something very mysterious about the whole business, which will have to be elucidated before we can expect to get much further.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS. Colorado: Denver, Sept. 13. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY. Colorado: Denver, Sept. 13. Sec., Dr. H. W. Loeb, 1402 So. Grand Blvd., St. Louis, Mo.

ARIZONA: Phoenix, Oct. 5. Sec., Dr. W. O. Sweek, Phoenix.

CALIFORNIA: Sacramento, Oct. 18-21. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, Oct. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

FLORIDA: Tallahassee, Oct. 12-13. Sec., Dr. William M. Rowlett, Box 603, Tampa.

GEORGIA: Atlanta, Oct. 12-14. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Boise, Oct. 5. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

ILLINOIS: Chicago, Oct. 5-7. Supt., Regis. and Education, Mr. V. C. Michels, Springfield, Ill.

IOWA: Des Moines, Oct. 12-14. Commissioner, Dept. of Health, Dr. Henry Albert, Des Moines.

KANSAS: Topeka, Oct. 12. Sec., Dr. Albert S. Ross, Sabetha.

MICHIGAN: Lansing, Oct. 12-14. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, Oct. 5-7. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

MONTANA: Helena, Oct. 5-7. Sec., Dr. S. A. Cooney, Helena.

NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.

NEW JERSEY: Trenton, Oct. 19-20. Sec., Dr. Charles B. Kelley, Trenton.

NEW MEXICO: Santa Fe, Oct. 11-12. Sec., Dr. W. T. Joyner, Roswell.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 20-23. Chief, Professional Exams. Bureau, Mr. Herbert J. Hamilton, State Education Building, Albany.

OKLAHOMA: Oklahoma City, Sept. 14-15. Sec., Dr. J. M. Byrum, Shawnee.

RHODE ISLAND: Providence, Oct. 7-8. Sec., Dr. B. U. Richards, Providence.

UTAH: Salt Lake City, Oct. 5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WISCONSIN: Basic Science Board, Madison, Sept. 18. Sec., Dr. M. F. Guyer, University of Wisconsin, Madison.

WYOMING: Cheyenne, Oct. 4-6. Sec., Dr. G. M. Anderson, Cheyenne.

Wyoming June Examination

Dr. G. M. Anderson, secretary of the Wyoming Board of Medical Examiners, reports the written examination held at Cheyenne, June 7-8, 1926. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. One candidate was examined and failed. Seven candidates, including 1 osteopath, were licensed by reciprocity. The following colleges were represented:

College FAILED	Year Grad.	Per Cent
Baylor University College of Medicine	(1919)	71.7

College LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School (1918) California	(1925)	New Jersey
Tuft's College Medical School	(1910)	Maine
Univ. of Nebraska College of Medicine	(1925, 2)	Nebraska
Medical Dept. of the Univ. of the City of New York	(1880)	Minnesota
Osteopath		Missouri

Oklahoma June Examination

Dr. J. M. Byrum, secretary of the Oklahoma Board of Medical Examiners, reports the written examination held at Oklahoma City, June 15-16, 1926. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Forty-one candidates were examined, all of whom passed. Five candidates were licensed by reciprocity. The following colleges were represented:

College PASSED	Year Grad.	Number Passed
Indiana University School of Medicine	(1926)	1
State University of Iowa College of Medicine	(1925)	1
University of Louisville School of Medicine	(1925)	1
Harvard University	(1925)	1
University of Oklahoma School of Medicine	(1926)	36
University of Virginia Department of Medicine	(1924)	1

College LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas Medical Department	(1915)	Arkansas
Chicago College of Medicine and Surgery	(1914)	Illinois
University of Pennsylvania School of Medicine	(1922)	Mississippi
University of Tennessee College of Medicine	(1925)	Tennessee
University of Texas Department of Medicine	(1913)	Texas

Book Notices

SIMPLIFIED INFANT FEEDING: With Eighty Illustrative Cases. By Roger H. Dennett, B.S., M.D., Professor of Diseases of Children and Director of the Department in the New York Post-Graduate Medical School. Third edition. Cloth. Price, $5. Pp. 415, with 14 illustrations. Philadelphia: J. B. Lippincott Company, 1926.

The success of any system of infant feeding is not inherent in that system but rather in its intelligent use. The term "system" misleads the student and conjures up for him visions of such mechanical devices as tables, slide rules and rotating score cards. Then what rôle system? Quoted in the preface to Dr. Dennett's first edition, Jacobi answers, "It *is* possible to be guided by rule" at first. In this edition the author maintains the method of describing cases to illustrate the various feeding problems and their solution. As no essential change in the simple feeding principles has been found necessary in at least eleven years since the first edition was published, it seems plausible that success with simple mixtures is not limited to the boys who man the infant welfare stations. It may be desirable but is not essential that every great pediatrician father a new baby food. Under the stimulus of enthusiastic feeding combinations taught in their particular schools, young men crusade forth spreading synthetic milks, administering acid milks, disseminating goat's milk, while preaching gelatin mixtures, casein, karo. Veterans of the simple methods like Dr. Dennett assume the fixed position of the figure Time in Lorado Taft's great group, and meditate on the flying whirls of the feeding cycles. In perspective there are indications for the newer preparations, and the author devotes several sections illustrating their application. On the other hand, routine use of complicated combinations brings them into disrepute. In medicine there are no panaceas, and in infant feeding only breast milk. Dr. Dennett's book has a practical tone throughout from the first chapter devoted to a synopsis of the entire text to the last one describing proprietary foods and containing the list of illustrative cases, list of tables, and caloric values of milks. Theories are introduced only when the subject requires illumination. The section on diarrheas due to individual food components would not appear to be so helpful from the angle of clinical recognition. In the table of lengths of babies under 3 years of age the values seem low for the average white child in private practice, particularly for the weights tabulated in the same section. From the standpoint of the baby there are newer discussions of dehydration and celiac disease. The sections on rickets and scurvy are delightful in their common sense and comprehensiveness, while happily devoid of cumbersome data.

GESCHLECHTSKRANKHEITEN BEI KINDERN. Ein ärztlicher und sozialer Leitfaden für alle Zweige der Jugendpflege. Herausgegeben von A. Buschke und M. Gumpert. Paper. Price, 5,40 marks. Pp. 108, with 10 illustrations. Berlin: Julius Springer, 1926.

For two years the authors have been collecting clinical material concerning acquired venereal diseases of children, with the view of pointing out to physicians the increase in these diseases and also to stimulate attention and participation in their prophylaxis. The authors think that in order to recognize the social causes which permit the spread of these diseases, there should be cooperation between physicians, welfare workers, teachers and parents. They have found in their experience that welfare workers amoung children have little knowledge as to the cause or the communicability of sexual diseases. The workers are usually willing to help and evince a great interest, but they do not have the necessary technical information. On the other hand, the physician who at least has no difficulty in recognizing the disease condition is usually at a loss in giving adequate advice in discovering and remedying the underlying social conditions. In this little book a brief survey is made of the legal, medical, social and psychologic questions. Only the most essential points are considered. It is important that the physician should acquire the point of view of the social service worker;

on the other hand, it is equally important that the social worker should have correct information about the nature of these diseases, especially in order to protect the child in his surroundings from the dangers that are incident to these infections. The authors recognize that the extragenital infection of syphilis is not the usual method in childhood. Nevertheless, the disease may be spread in this way. They point out that there is a large area in Russia, the Balkan states and the tropics where syphilis is endemic and a greater part of the population is affected. Acquired syphilis among children has increased markedly during the last few years. The usual clinical description of congenital syphilis is given in a special chapter. The authors also devote a chapter to gonorrheal infections in children. They consider in some detail the mode of infection, the lesions produced, and the general symptomatology. There is a detailed account of gonorrheal infection of the rectum, as well as a statistical and symptomatic account of the disease in little boys. Considerable space is given to systemic infection produced by the gonococcus. They describe instances of joint and tendon infection, endocarditis and gonorrheal sepsis, as well as the occurrence of a papular eruption in some instances, or nodules in the skin in others. Infection of the cavities of the mouth and nose and gonorrheal ophthalmia are also referred to. A short chapter is contributed by Franz Kramer on the relation of genital infections to psychic disturbances. Kramer thinks that from 10 to 15 per cent of all cases of mental defectiveness are due to congenital syphilis. There is a considerable amount of information collected in this little volume referring to this group of disorders which should be of interest to physicians and also to social workers, nurses and others who are working in the field of infant and child welfare.

EDUCATION AND THE GOOD LIFE. By Bertrand Russell. Cloth. Price, $2.50. Pp. 319. New York: Boni & Liveright, 1926

Bertrand Russell's writings are always interesting; one accordingly takes up a book of his with agreeable anticipations. It is an interesting, thought-provoking book; but we have not found it "thrilling," "eloquent" or "fascinating," to enumerate some of the terms that have been applied to it by reviewers. More appropriate seems the judgment of John Dewey, that "the chief characteristic of the book is enlightened empirical common sense." This is an accurate characterization, and it is no mean praise. The work is a practical study of elementary education from the standpoint of one who is a careful observer of childhood and who has a philosophical mind. The title is rather misleading. "Education and the Good Life" suggests something broader than a study of elementary education, and this book is not that. In fact, all of it except one chapter devoted to the university confines itself to a study of childhood and of primary education. Some of the author's economic and social doctrines are not universally accepted, and some of his conclusions from these premises would therefore be questioned by some men; but this does not detract from the fact that the book is an exceedingly keen and wise study of the child's intellectual development and of the education that children need. After the capacity for observation and the philosophical mind which the work shows, its main characteristic is sympathetic common sense. It is a book that can be enthusiastically recommended to parents. If its teachings were generally known and followed, we would see much less frequently the self-centered children with their unhappy sense of self-importance and, by the same token, many more wholesome-minded children—and adults. Only one chapter is devoted to the university, and this of necessity is sketchy. It contains, however, many interesting observations shocking to our self-deceptions and illustrating the author's independent, original mind:

> I am convinced that, at present, only a minority of the population can profit by a scholastic education prolonged to the age of twenty-one or twenty-two (p. 301).
>
> Obviously, the principle of selection (for university training) ought to be educational, not financial (p. 302).
>
> Snobbery makes successful businessmen send their sons to Oxford (some American names might be substituted here) to be turned into "gentlemen" (p. 303).
>
> At present it is very difficult to enter upon such a profession as law or medicine unless one's parents have a certain amount of money. The consequence is that the principle of selection is social and hereditary, not fitness for the work (p. 306).
>
> The idea of the university as a place of leisure where rich young men loaf for three or four years is dying, but, like Charles II, it is an unconscionable time about it (p. 308).

One puts down the book feeling that one would like to have Russell supplement it by a book that really meets the title—a book on the philosophy of life as a whole and on the relation of education, not simply of preliminary education, to it. There are a number of things on which one would differ with Russell, but on the whole it would be immensely interesting and stimulating.

THE TREASURY OF HUMAN INHERITANCE. By Karl Pearson, F.R.S. Volume II. Anomalies and Diseases of the Eye. Part II. Colour-Blindness. By Julia Bell, M.A., M.R.C.S., L.R.C.P. Nettleship Memorial Volume. Eugenics Laboratory Memoirs, XXIII. Paper. Price, 45 shillings net. Pp. 267, with illustrations. London: Cambridge University Press, 1926.

Part II of this scholarly volume is divided into six sections, of which the first three are mainly text. Section I opens with a historical outline of our knowledge of color vision, discusses normal color vision, the solar spectrum, and the anatomy concerned, and ends with a subsection on color vision in animals. The author has searched for the earliest contributions to the subject among Greek writings of about 500 B. C., and follows the development of our ideas down to the present day. In concluding this section she writes: "One is struck by the elusiveness of the phenomena of colour vision, and by the sadly little we really know about it." Total color-blindness, both congenital and acquired, is discussed in the second main section. Exhaustive investigation of and comment on the literature has made possible the publication in this single work of important hypotheses, theories and conclusions. Under the heading "Congenital Colour-Blindness," the final text section deals with those phenomena which, as the author explains, are more exactly described by such terms as "dichromatic vision" or "red-green blindness." The literature of this defect is considered from the standpoints of its history, its frequency and geographic distribution, its nature, its occurrence in women, and its hereditary aspects. Sections IV, V and VI comprise a bibliography and pedigree plates with descriptions of them. The plates are excellent and the descriptions clear. This volume is not the last word on color blindness, for that word has not yet been spoken; but it is the last word to date, indispensable as a point of departure for further investigation, and a worthy as well as an appropriate memorial to Edward Nettleship.

CLINIQUE MÉDICALE DES ENFANTS: Troubles de la nutrition et de la croissance. Par P. Nobécourt, Professeur de clinique médicale des enfants a la Faculté de médecine de Paris. Paper. Price, 36 francs. Pp 404, with 113 illustrations. Paris: Masson et Cie, 1926.

In this volume on the disturbances of growth and nutrition in children, Nobécourt follows the method he employed in the previous volumes on the affections of the circulatory and respiratory systems. He relates case histories, shows the methods used to arrive at a diagnosis, and points out the difficulties encountered and the treatment instituted. With these cases as a basis he discusses the material in the light of present conceptions, and seeks to draw conclusions that seem most logical in light of the present state of our knowledge. The first portion of the book is devoted to the consideration of hypothyroidism in children. The morphologic characteristics of congenital myxedema are given, and the effect of this condition on growth fully elaborated. Nobécourt states that it is evident that the thyroid secretes substances which act on growth. These substances are termed hormones, but he points out that we know nothing of their nature or mode of action. In regard to the hypotrophies, or infantilism, the author gives two large etiologic classes, the acquired and the congenital, hereditary or constitutional. He states that deficient alimentation and infections are the factors of importance in production of the acquired type. The influence of heredity on the child is well known. Intoxications, infections, diatheses and temperament are factors bearing on this type. Particularly important is syphilis in the parents. The neuro-arthritic and lymphatic diatheses also lead to infantilism. Several chapters are devoted to gigantism and acromegaly. The case of a girl presenting this syndrome is discussed. The condition started without any appreciable cause when she was 9 years old. There was no hypophysial tumor or any evidence of syphilis. The author states that in the absence of any known causation it is difficult to institute efficacious treatment. Gigantism may be physiologic or pathologic. In the latter group it may be due to a tumor of the hypophysis, syphilis, cerebral lesions or disturbances of the endocrine glands. The cause cannot be demonstrated in all cases. Obesity is divided into three types: the nonendocrine, for which no etiologic factor has been discovered; the endocrine, due to pluriglandular disturbances, and that due to cerebral lesions such as is seen in idiocy. A large portion of the book is devoted to the consideration of diabetes mellitus in children, with details of the dietary management and the use of insulin. Consideration is also given to acetonemia in diabetes, cyclic vomiting, chronic articular rheumatism and fragilitas ossium. All the subjects are treated in a thorough and interesting manner. The material presented is unusual, and the book contains much information that will aid the physician in understanding these conditions of disturbed growth and nutrition, which are so difficult to alleviate.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

Ergebnisse der medizinischen Strahlenforschung (Röntgendiagnostik, Röntgen-, Radium- und Lichttherapie). Herausgegeben von H. Holfelder, H. Holthusen, O. Jüngling, und H. Martius. Band II. Paper. Price, 52.50 marks. Pp. 594, with 523 illustrations. Leipsic: Georg Thieme, 1926.

Second volume of new German system on light in diagnosis and treatment; the first was reviewed, Aug. 25, 1925.

Roentgen Interpretation. A Manual for Students and Practitioners. By George W. Holmes, M.D., Roentgenologist to the Massachusetts General Hospital, and Howard E. Ruggles, M.D., Roentgenologist to the University of California Hospital. Third edition. Cloth. Price, $5. Pp. 326, with 226 illustrations. Philadelphia: Lea & Febiger, 1926.

Aid to physician or roentgenologist in study of roentgenograms.

A Manual of Radioactivity. By George Hevesy, Ph.D., and Fritz Paneth, Ph.D. Translated by Robert W. Lawson, D.Sc. Cloth. Price, $5. Pp. 252, with 42 illustrations. New York: Oxford University Press, 1926.

Analysis of various types of ray activity leaning largely to physical rather than medical views.

Technique des prélèvements et des biopsies dans la pratique clinique. Par Robert Dupont, Roger Leroux, chef des travaux d'anatomie pathologique à la Faculté de Paris, et Jean Dalsace, chef de laboratoire à l'hôpital Saint-Antoine. Préface du Professeur G. Roussy. Paper. Price, 48 cents. Pp. 142, with 50 illustrations. Paris: Masson & Cie, 1926.

Handbook of laboratory diagnosis.

Hay-Fever and Asthma. A Practical Handbook for Hay-Fever and Asthma Patients. By Ray M. Balyeat, A.M., M.D., Instructor in Medicine in the University of Oklahoma Medical School. Cloth. Price, $2. Pp. 198, with 27 illustrations. Philadelphia: F. A. Davis Company, 1926.

Sensible summary of current knowledge with reports of author's cases.

Erinnerungen an Heinrich Curschmann. Von Fritz Curschmann, Hans Curschmann, Carl Hirsch, und Felix Wolff. Boards. Price, 4.50 marks. Pp. 88, with 6 illustrations. Berlin: Julius Springer, 1926.

The life of a versatile German scientist, artist and writer, prepared by his loving relatives and friends.

Carbohydrate Metabolism and Insulin. By John James Rickard Macleod, F.R.S., M.B., LL.D., Professor of Physiology, University of Toronto, Canada. Cloth. Price, $6. Pp. 357, with illustrations. New York: Longmans, Green & Co., 1926.

Complete monograph on physiology of insulin.

First Quarter Century in the Fight Against Tuberculosis, 1901-1926. Paper. Pp. 109, with illustrations. Columbus: Ohio Public Health Association, 1926.

Handbook of Ohio's share in the struggle against tuberculosis.

La sécrétion interne du pancréas et l'insuline. Par André Choay, docteur en médecine, pharmacien, medaille d'or de l'internat des hôpitaux de Paris. Paper. Price, $2. Pp. 570, with 7 illustrations. Paris: Masson & Cie, 1926.

French monograph on insulin, mostly bibliographic.

Hautkrankheiten. Von Dr. Georg Alexander Rost, o. Professor der Dermatologie und Direktor der Universitätshautklinik in Freiburg im Breisgau. Cloth. Price, 27 marks. Pp. 405, with 104 illustrations. Berlin: Julius Springer, 1926.

Beautifully illustrated guide to diseases of the skin.

Fundamentals of Dermatology. By Alfred Schalek, M.D., Professor of Dermatology and Syphilology, University of Nebraska College of Medicine. Cloth. Price, $3. Pp. 239, with 54 illustrations. Philadelphia: Lea & Febiger, 1926.

Dermatology outlined for ready reference.

Sémiologie oculaire, le cristallin. Anatomie. Physiologie. Pathologie. Par Félix Terrien, professeur à la Faculté de médecine de Paris. Paper. Price, $1.44. Pp. 240, with 158 illustrations. Paris: Masson & Cie, 1926.

Pathology and treatment of cataract.

Saint Bartholomew's Hospital Reports. Edited by W. McAdam Eccles, Sir Thomas Horder, Sir Bernard Spilsbury, W. Langdon Brown, W. Girling Ball, and Geoffrey Evans. Vol. LIX. Cloth. Price, £1-1-0 net. Pp. 205, with illustrations. London: John Murray, 1926.

Collection of addresses by hospital staff.

Treatment of Cancer: Its Successful Medicinal Treatment. By J. Murray, M.D. Cloth. Price, $2.50. Pp. 123. Joliet, 1925.

Author uses chlorides of nickel and iron and tells about it in his privately printed publication.

Sorrell and Son. By Warwick Deeping. Cloth. Price, $2.50. Pp. 400. New York: Alfred A. Knopf, 1926.

Novel among best sellers, written by a physician and covering much medical interest.

Ueber Encephalographie im Kindesalter. Von Dr. Th. Brehme, Assistent an der Universitäts-Kinderklinik in Heidelberg. Paper. Price, 4.20 marks. Pp. 50, with 45 illustrations. Berlin: S. Karger, 1926.

Roentgen-ray photography of the brain in children and its uses.

"Bilharzia," a Paper for the Practitioner. By F. Gordon Cawston, M.D. Boards. Pp. 20. London: John Bale, Sons & Danielsson, Ltd., 1925.

Reprint of brief essay in *Journal of Tropical Medicine.*

Birth Control and the State. A Plea and a Forecast. By C. P. Blacker, M.C., M.A., M.R.C.S. Cloth. Price, $1. Pp. 87. New York: E. P. Dutton & Company, 1926.

Inspiring essay in "Today and Tomorrow" series.

Les entéropathies microbiennes. Par Prof. G. Sanarelli, directeur de l'institut d'hygiène de l'Université de Rome. Paper. Price, 80 cents. Pp. 227, with 28 illustrations. Paris: Masson & Cie, 1926.

Intestinal infections, especially cholera.

Les curiosités de la médecine: Les fonctions de la vie. Par Docteur Cabanès. Paper. Price, 10 francs. Pp. 368. Paris: E. le François, 1926.

Collection of medical anecdotes.

Pernicious Anemia. By Frank A. Evans, M.D. Cloth. Price, $2.50. Pp. 178. Baltimore: Williams & Wilkins Company, 1926.

Monographic survey of current information.

American Instructors of the Deaf. Report of the Proceedings of the Twenty-Fourth Meeting of the Convention of American Instructors of the Deaf, June 29 to July 4, 1925. Cloth. Pp. 207, with illustrations. Washington: Government Printing Office, 1926.

Traitement des maladies mentales par les chocs. Par C. Pascal, médecin en chef des asiles publics d'aliénés de la Seine, et Jean Davesne. Paper. Price, 60 cents. Pp. 182. Paris: Masson & Cie, 1926.

The Scientific Basis of Chemotherapy. Part 1. By Iwan I. Ostromislensky, Ph.D., M.D. Paper. Price, $1.50. Pp. 142. New York: Inter-American Medical Publishing Company, 1926.

New and Nonofficial Remedies, 1926. Cloth. Price, $1.50. Pp. 459. Chicago: American Medical Association, 1926.

Medicolegal

Admissibility of Testimony to Complaints of Patient

(Raymond & Whitcomb Co. v. Ebsary (U. S.), 9 Fed. R. (2d) 889)

The United States Circuit Court of Appeals, second circuit, says, in this action for damages wherein the wife of plaintiff Ebsary testified as to what she had heard him tell a physician as to his condition and what she had overheard the physician say as to the condition of her husband, that an attending physician may testify to complaints made to him when he attends a patient for the purpose of treating him; but the testimony of a third person, other than a physician, of complaints and statements is not admissible. It differs from information given by a patient to a physician who is attending him professionally. Furthermore, the court says that what transpired days later than when the alleged cause of action arose was not part of the res gestae (essential circumstances of the case). It was hearsay. Expressions of mental or bodily injuries or mental feeling of an individual, which are made at the time of injury, are admissible in evidence. Representations made by a sick person of the nature and effects of a malady then made are admissible. A physician's testimony as to such statements, which formed a part of the res gestae, is competent evidence. But this rule has no application to statements made to the physician days after. They are not part of the res gestae.

Account Between Physicians—Check Stubs as Evidence

(Rose v. King (Ark.), 279 S. W. R. 373)

The Supreme Court of Arkansas says that the plaintiff and the defendant were physicians and for a number of years had offices with a common reception room. They had a working agreement by which the plaintiff was to receive a stipulated sum for administering anesthetics to the private patients of the defendant. They had a settlement in 1920, showing that the defendant owed the plaintiff $1,405, at which time the defendant paid $1,000 on the account. Their testimony was in conflict as to whether the balance was subsequently paid. In 1920, the defendant, who was chief surgeon of a miners' hospital association, selected the plaintiff as his assistant. In addition to the professional services they rendered the hospital, each had his private or charge patients. The old arrangement was continued as to the private patients of the defendant after the plaintiff's employment at the hospital. Neither of the physicians kept a regular set of books. The plaintiff kept a card index called a loose leaf or slip system. The defendant made notations on stubs of his checks showing the purpose for which the checks were given. After the plaintiff severed his connection with the hospital, he made up a statement of account from the card index, showing a balance due him by the defendant of $2,015 for administering anesthetics to and making roentgenograms of the defendant's private patients from the date of their settlement in 1920 to March 1, 1924, and made this the basis of the suit. The defendant testified that he had paid the plaintiff all that he owed him except $60, which he owed for administering anesthetics from Dec. 5, 1923, to March 1, 1924, and he was permitted to introduce a number of check stubs, on which notations had been entered by him showing the months for which he paid the plaintiff. The notation on the last stub introduced showed that a check had been issued to the plaintiff, Dec. 5, 1923, amounting to $120 for July, August, September, October and November, 1923, for anesthetics. The defendant testified that he depended on the plaintiff to keep the account between them, and would pay the bills when presented, noting at the time on the stubs of the checks for what they were given. The result was a judgment for the plaintiff for $60, which is affirmed, after his appeal therefrom as insufficient.

There was sufficient testimony of a substantial nature in the record to sustain the verdict and judgment for $60. The last stub showed that the check covered services rendered in the months of July to November, 1923. It was unlikely that the defendant would have paid for these services before paying for services rendered at an earlier date. The stubs introduced showed payment for various months during the several years covered by the arrangement. These stubs strongly corroborated the testimony of the defendant that he paid the plaintiff for the services rendered prior to Dec. 5, 1923. It was urged that the stubs were inadmissible because in no sense an account book. They were introduced in connection with the defendant's testimony showing that they constituted the only and original record he made of the transactions, and that the notations thereon were made by him contemporaneously with the several transactions. Nor was it reversible error to permit the jury to call for and take the stubs to their room after retiring to consider the case.

Due Process of Law and Equal Protection of the Laws

(State of Missouri ex rel. Hurwitz v. North et al., Board of Health of State of Missouri (U. S.), 46 Sup. Ct. R. 384)

The Supreme Court of the United States, in affirming a judgment of the Supreme Court of Missouri, says that the plaintiff in error (the relator) was a physician licensed to practice by the state board of health of Missouri. On complaint made to the board, and after notice and hearing, his license to practice was revoked on the ground that he had unlawfully produced an abortion. The proceedings before the board were reviewed on certiorari by the state circuit court and the determination of the board sustained. On appeal to the Supreme Court of Missouri, the judgment was affirmed (264 S. W. 678, 304 Mo. 607).

By section 7336 of the Missouri revised statutes, the state board of health is authorized to grant licenses for the practice of medicine within the state, and, after hearing, to revoke licenses, "for producing criminal abortions" and for other specified causes. Hearings are required to be on twenty days' written notice, personally served on the physican against whom charges are made, containing "an exact statement of the charges and the date and place set for hearing." The statute provides that:

> Testimony may be taken by deposition, to be used in evidence on the trial of such charges before the board in the same manner and under the same rules and practice as is now provided for the taking of depositions in civil cases.

It is also provided that proceedings before the board may be reviewed by the state circuit court on certiorari and, as was done here, an appeal may be taken from the judgment of the circuit court to the supreme court of the state.

The plaintiff's assignments of error assailed the correctness of various rulings of the state court as to the meaning and effect of the statute drawn in question. Those assignments must be disregarded here, as on writ of error to a state court this court is bound by its construction of the state law. The Supreme Court of Missouri held that, in the proceedings for the revocation of the plaintiff's license, he was entitled to take testimony on deposition, as provided by the statute, but not to subpena witnesses to appear before the board, and that his application for such subpenas was properly denied. It was assigned as error that these rulings and the revocation of the plaintiff's license by the state board of health were a denial of due process of law and of the equal protection of the laws under the fourteenth amendment to the constitution of the United States. It has been so often pointed out in the opinions of this court that the fourteenth amendment is concerned with the substance and not with the forms of procedure as to make unnecessary any extended discussion of the question here presented. The due process clause does not guarantee to a citizen of a state any particular form or method of state procedure. Its requirements are satisfied if he has reasonable notice, and reasonable opportunity to be heard and to present his claim or defense; due regard being had to the nature of the proceedings and the character of the rights that may be affected by it.

The procedure authorized by the Missouri statute, as it was applied by the board, satisfied these requirements. The notice prescribed was reasonable. The testimony of all witnesses who appeared before the board was taken and recorded, including that of the plaintiff in error. Although the statute did not authorize the board to issue subpenas, the plaintiff in error was authorized, as the state court held, to take the depositions of witnesses who did not voluntarily appear. Officers who take depositions are authorized to compel witnesses to attend and give testimony (Rev. Stat. Mo. 1919, sec 5460). The depositions, when taken, may be read at the hearing before the board. The procedure prescribed and followed here gave ample opportunity to the plaintiff to make a defense to the charges preferred, and there was no denial of due process.

Nor did the statute deny to the plaintiff in error the equal protection of the laws. A statute that places all physicians in a single class, and prescribes a uniform standard of professional attainment and conduct, as a condition of the practice of their profession, and a reasonable procedure applicable to them as a class to insure conformity to that standard does not deny the equal protection of the laws within the meaning of the fourteenth amendment.

Not Required to Make Inquiry as to Latent Ailments

(Willey v. Alaska Packers' Ass'n (U. S.), 9 Fed. R. (2d) 937)

The United States District Court, N. D. California, S. D., in rendering a decree for the defendant, says that this suit was brought by an executor to recover damages for the death of a seaman, who, on an Alaskan fishing voyage, fell overboard, as a result of which he contracted a severe cold that was followed by a bad cough, from which death by tuberculosis eventually followed. It was contended that tuberculosis is an arrestable disease, and that in this case it was directly traceable to a cold, which would have been cured if the seaman had been furnished with timely medical attention. But the court holds that there was an abundance of evidence to the effect that the man's death resulted, if not from his own negligence, in any event from the fault of no one else. Though it manifestly is the duty of a master (or owner) to furnish proper medical attention and necessities to the seamen over whom he has charge, whether they request it or not, when a seaman himself does not consider himself sick, and makes no complaint whatever, this obligation cannot be held so extensive as to require inquiry as to latent ailments.

Thrombus Phlebitis Not Result of Accident

(Frank v. Chicago, M. & St. P. Ry. Co. (S. D.), 207 N. W. R. 89)

The Supreme Court of South Dakota, in affirming a judgment reversing an order granting an award under the workmen's compensation act, says that the sole question to be determined was whether or not the claimant's affliction was the result of an accident. To be compensable under the workmen's compensation act, merely experiencing the first symptoms of a disease while working is not sufficient—the injury must occur because of the work. The injury to the claimant's leg was concededly (or at least no other explanation was given) the result of a clot of blood in the femoral vein of the leg. The direct cause of all the pain, fever, swelling and other complications was the clot of blood. What caused the clot of blood? The defendant company said that it was disease or infection, and in this was pretty well supported by medical authority. The claimant said that it was the labor which he was performing, and supported this contention by the circumstances surrounding the first appearance of the affliction and some admissions of the medical men. Assuming the truth of his testimony, the first pain was felt suddenly while he was in the performance of his regular duties of pushing a loaded wheelbarrow up an inclined plain. No unusual strain was claimed, but, because the pain came on suddenly, it might be inferred that something had given way or broken in the human anatomy, and that the muscular exertion of labor was the force which caused the break.

Many of the cases cited by the claimant treat as accidents broken blood vessels occurring under the strain of labor, and he argued that, if a broken blood vessel may be the result of an accident, a distended blood vessel not broken may be. No doubt this is true, if the work distends the blood vessel so as to result in injury. Whether a sudden distention of a blood vessel which does not break can result in injury this court does not know. The evidence in this case did not warrant the assumption that that happened. The varicosity of the veins in this case was explained as due to the clogging of the femoral vein and a consequent burden on the outer veins of the leg in carrying the blood theretofore carried by the femoral vein. It was not the strain that caused the distention of the veins, but the clot of blood. The medical authorities say that labor will not cause a thrombus, but that it results from infection. Even the lay mind knows that a clot of blood will not form suddenly from a strain. This differs from a case of a burst blood vessel resulting in slow paralysis. While the paralysis may progress slowly, the bursting vein causing it is of a definite sudden occurrence, directly traceable to a strain. Any exertion that increases the heart action no doubt distends the veins and arteries in increased pulsations and consequent burden on the veins, but this is usual, expected and not injurious. Exercise is usually considered beneficial. Perhaps too much exercise or labor may be injurious and produce varicose or permanently distended veins, but such a condition must be classed as a disease—it cannot be classed as caused by accident. If the claimant's ailment was thrombus phlebitis, and there was no evidence that it was anything else, it would not have been the result of an accident arising out of and in the course of his employment, but it was a disease resulting from some cause other than an injury by accident.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Colorado Springs, Sept. 13-18. Dr. Luther C. Peter, N. E. Cor. Chestnut and 20th Streets, Philadelphia, Secretary.

American Association for Thoracic Surgery, Montreal, Canada, Sept. 30. Dr. Ethan Flagg Butler, Robert Packer Hospital, Sayre, Pa., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Chicago, Sept. 20-22. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.

American Climatological and Clinical Association, Philadelphia, Sept. 27-28. Dr. A. K. Stone, Auburn Street, Framingham Center, Massachusetts, Secretary.

American College of Physical Therapy, Chicago, Oct. 18-23. Dr. R. W. Fouts, City National Bank Building, Omaha, Secretary.

American Electrotherapeutic Association, Atlantic City, Sept. 8-11. Dr. Richard Kovacs, 223 E. 68th Street, New York City, Secretary.

American Public Health Association, Buffalo, Oct. 11-14. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

Association of Military Surgeons of the United States, Philadelphia, Oct. 14-16. Col. J. R. Kean, U. S. A., Ret., Army Medical Museum, Washington, D. C., Secretary.

Central States Pediatric Society, St. Louis, Oct. 22-23. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

Central Tri-State Medical Society, Huntington, W. Va., Sept. 9. Dr. F. O. Marple, 418 Eleventh Street, Huntington, Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 21-23. Dr. F. B. Stephenson, 460 Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Dover, Oct. 12-13. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Idaho State Medical Association, Sandpoint, Sept. 2-5. Dr. J. N. Davis, Kimberly, Secretary.

Indiana State Medical Association, West Baden, Sept. 22-24. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 18-22. Dr. W. B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.

Kentucky State Medical Association, Frankfort, Sept. 20-23. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Lansing, Sept. 14-17. Dr. F. C. Warnshuis, Powers Theatre Building, Grand Rapids, Secretary.

Missouri Valley, Medical Society of the, Council Bluffs-Omaha, Sept. 15-17. Dr. Charles Wood Fassett, 115 East 31st St., Kansas City, Mo., Sec'y.

National Tuberculosis Association, Washington, D. C., Oct. 4-7. Dr. George M. Kober, 1819 Eye Street, N. W., Washington, D. C., Sec'y.

Nevada State Medical Association, Reno, Sept. 24-25. Dr. H. J. Brown, Gray-Reid Building, Reno, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 11-14. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southwest, Medical Association of the, Kansas City, Mo., Oct. 5-9. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Vermont State Medical Society, Burlington, Oct. 14-15. Dr. W. G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 12-15. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Western Surgical Association, Duluth, Minn., Oct. 14-16. Dr. H. P. Ritchie, Lowry Building, St. Paul, Secretary.

Wisconsin, State Medical Society of, Madison, Sept. 15-17. Mr. J. G. Crownhart, 153 Oneida Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in North America for a period of three days Foreign journals prior to 1921 and domestic journals prior to 1923 are not available Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

6: 507 619 (July) 1926

*Antimeningococcus Serums. A. Wadsworth and M. B. Kirkbride, Albany, N Y.—p 507.
Relationship of Plankton to Anopheline Larvae. L T. Coggeshall, New York.—p. 556
*Epidemiology of Pneumonia: Pneumococcus Carriers. J. P Powell, R M. Atwater and L. D Felton, Boston —p. 570
Animal Infections with Trophozoites of Intestinal Protozoa: Their Bearing on Functions of Cysts. R. W. Hegner, Baltimore —p. 593.
*Modifying Infections with Bird Malaria by Changing Sugar Content of Blood. R. W. Hegner and M S. MacDougall, Baltimore —p. 602.
Differential Fertility in United States R. Pearl, Baltimore —p 610.
*Theory of Muscle Contraction J. H Clark, Baltimore —p 617
Is Formation of Guarnieri Bodies an Exclusively Mammalian Response to Infection with Vaccine Virus? H. B. Andervont, Baltimore.—p 618.

Use of Antimeningococcic Serums.—The importance of early diagnosis and prompt serum treatment is confirmed by Wadsworth and Kirkbride, but striking results were recorded in some of the patients treated late in the course of the disease.

Epidemiology of Pneumonia.—The data presented by Powell, Atwater and Felton serve to confirm the view that the disease pneumonia appears when there is a coincidence between infection with a pathogenic form of the pneumococcus and a lack of resistance in the same individual.

Modifying Malaria Infections by Changing Blood Sugar Curve.—The data obtained by Hegner and MacDougall show that an increase in the sugar content of the blood modifies the course of the infection, bringing about conditions favorable for the parasite and hence prolonging the infection until death results. According to this hypothesis, decreasing the sugar content of the blood should bring about unfavorable conditions for the parasite. The authors have attempted to do this with insulin with suggestive, but not conclusive results.

Theory of Muscle Contraction.—The theory proposed by Clark for muscle contraction is that, as a result of the increased acidity due to lactic acid formation, the substances in the anisotropic bands pass from the liquid to the solid crystal form This would result in a closed packing of the molecules and a deformation which would bring about the mechanical shortening.

American Journal of Physiology, Baltimore

77: 1 244 (June) 1926

Action of Epinephrine and Acetyl Choline on Coronary Arteries of Rabbit F M Smith, G H Miller and V C. Graber, Iowa City —p 1.
Uterine Contracting Power of Spinal Fluid After Administration of Extracts from Sex Glands and Other Organs N. F Blau and K. G Hancher, New York —p 8
*Source of Vitamin B in Nature M T. Burrows and L. H Jorstad, St Louis —p. 24.
*Source of Vitamin A in Nature M T Burrows and L H Jorstad, St Louis —p 38.
*Injection of Testis Material into Rat and Effect on Spermatogenesis. W J Quick, Chicago —p 51
*Activity of Displaced Testes and Bearing on Problem of Function of Scrotum C R Moore, Chicago —p 59
Effect of Insulin on Decerebrate and Decapitate Cats. J. M. D Olmsted and A C Taylor, Toronto —p 69
Strontium as Source of Error in Blood Calcium Determinations. M Fay, Galveston, Texas —p. 73
*Cryptorchid Testes and Testicular Hormone Production. R M. Oslund, Chicago —p 76
*Ligation of Vasa Efferentia in Rats. R. M Oslund, Chicago —p. 83.
Alveolar Carbon Dioxide Tension Following Vigorous Muscular Exercise. N. Cordero, St. Louis.—p. 91.
*Suprarenal Insufficiency F. G Banting and S. Gairns, Toronto.—p 100.
Blood and Urine Findings in Desuprarenalized Dogs G. H. W. Lucas, Toronto —p 114
*Anatomic Changes Which Follow Removal of Pineal Body from Both Sexes of Immature Albino Rat. Y. Izawa, Philadelphia.—p. 126.
Effect of Low Ash Feeding on Growth of Albino Mouse in Subsequent Periods on Complete Dietary: Economy of Food Consumption. H. B. Thompson, Los Angeles —p 140.
Choline as Motor Hormone for Alimentary Tract. M. G. Mulinos, Chicago —p. 158.
Effect of Variations in Protein Intake on Acidity of Secretion of Fasting Stomach. F. Hoelzel, Chicago —p. 166.
Suprarenal Secretion During Anaphylactic Shock. B. A. Houssay and E. A. Molinelli, Buenos Aires —p. 181.
Suprarenal Discharge Produced by Drugs Injected into Suprarenal. B A. Houssay and E A. Molinelli, Buenos Aires —p 184.
Value of Egg Yolk in Supplementing Diets Deficient in Calcium. E. Tso, Peking —p. 192.
Effects of Radiations from Quartz Mercury Vapor Arc on Some Properties of Proteins H. L. Stedman and L B. Mendel, New Haven, Conn —p. 199.
Effect of Various Sugars (and of Epinephrine and Pituitary Extract) in Restoring Shivering Reflex. G. J. Cassidy, S. Dworkin and W. H. Finney, Montreal —p 211.
Physiology of Liver. XIII. As Site of Bilirubin Formation. F. C. Mann, C. Sheard, J. L. Bollman and E. J. Baldes, Rochester, Minn. —p 219
*Control of Parathyroid Tetany by Oral Administration of Ammonium Chloride. T. E. Boyd, W. C. Austin and E. F. Ducey, Chicago.—p 225.
Basal Metabolism in Prolonged Fasting in Man. N. Kleitman, Chicago. —p. 233.

Source of Vitamin B in Nature.—Burrows and Jorstad assert that body cells can grow only when acted on by a certain concentration of a substance or substances formed by them or by other cells. This substance has been called the archusia (S). The archusia (S) is necessary not only for growth but all activities of the cell. In concentrations lower than that necessary for growth, it induces differentiation and function. In the normal developing organism it does not exist in quantities sufficient for the early growth and later differentiation and function. This growth is dependent on a supply of it from other sources. This substance formed by body cells is not specific. Body cells can be made to grow by the archusia formed by bacteria and other plant and animal cells. Extracts of tissues and bacteria containing various quantities of archusia (S) as tested on tissue cells act in the same proportions as vitamin B substitute in the diet of animals. Vitamin B is probably only the normal energy for life (the archusia [S]) formed by all cells in nature. It is the stimulus necessary for the normal growth, differentiation and function of the body.

Sources of Vitamin A in Nature.—Burrows and Jorstad have shown that cultures of bacteria in their periods of most active growth supply large quantities of vitamin B, but no vitamin A, and that this vitamin B is probably only the normal growth stimulus of any cell in nature. Vitamin A is supplied by these same cultures of bacteria after they have overgrown the medium and have been destroyed by this overgrowth. This vitamin is needed by the functioning organism to replace a certain soaplike substance or substances lost to the cell during its differentiation and function. Its source is the protoplasm of other cells in nature. Vitamin A is essential for the organism in that it is one of the essential substances used in the building of intercellular substances of the body (the connective tissue fibrils, bone, etc.) in the storage of fat and in the function of tissue cells.

Effect of Injected Testis Material on Spermatogenesis.—This investigation was made by Quick to determine whether the injection of spermatozoa or testis material in male rats has any specific effect on the testis or spermatozoa detectable histologically or by breeding experiments. From one to five subcutaneous or intraperitoneal injections of spermatozoon suspensions or macerated testis material into white rats had no apparent specific effect on the activities of the testis. Testes were found normal from three days to four months after the last injection. Spermatozoa from such testes were motile, and litters were obtained from matings in a major number of the cases. The injection of formed materials resulted in the formation of cysts in some cases, the size and position of some of which brought about mechanical displacement of the testes from their normal scrotal environment. Degeneration of these testes then occurred. Such conditions are not primarily related to the absorption of material into the blood stream of the animals. The scrotal position of the testis is emphasized as being essential for the continuance of normal testicular activity.

Activity of Displaced Testis.—An examination of testicular activity after displacement from its normal scrotal environment was made by Moore. He found that testes of the rat and guinea-pig removed from the scrotum to a subcutaneous location may continue their spermatogenic function from three to nine months, but spermatozoa are not formed. The partner to the subcutaneous testis that has been located in the abdomen for a similar length of time does not carry on its spermatogenic function. The conditions regulating this difference are external rather than internal and are considered to be an effect of the environment. In the subcutaneous location a partial reduction of temperature has occurred and to this extent testicular function can be carried on. These results are confirmative evidence that temperature regulation is necessary for the primary function of the testis and emphasize again the function of the scrotum as a heat regulatory mechanism necessary for the production of spermatozoa.

Functions of Cryptorchid Testes.—Natural cryptorchid testes of man, dog, pig and sheep were studied by Oslund with reference to their spermatogenic powers and testicular hormone production. It has been found that the cells in seminiferous tubules of cryptorchid testes are active and produce other cells. These form a second incomplete row of cells or push centrad in the tubules. Some of the cells resemble primitive spermatogonia. These cells produce spermatogonia in cryptorchid testes which show spermatogenic activity after placement in the scrotum. It is quite evident that germ cells are present in natural cryptorchid testes and that these cells are not only potentially active but actually undergo division. Contrary to most of the reports found in the literature, it therefore appears that germ cells are usually present in cryptorchid testes. Since cryptorchid testes have active germ cells they should produce sperm following surgical transfer to the scrotum. The most that can be said concerning hormone production in these testes is that it is produced during the absence of mature spermatogonia, spermatocytes, spermatids and spermatozoa.

Effect of Ligation of Vasa Efferentia.—Oslund avers that ligation of vasa efferentia in rats is followed by an increase in size and hardening of the testis. This is caused by the retention of spermatogenic products in the testis. The process reaches its height in about forty-eight hours. Within seven days the testis decreases in size and in hardness. This change is caused by a decrease in, if not a cessation of, spermatogenesis and by the absorption of the now necrotic material that was retained by the ligature. The process of degeneration progresses with duration of the experiment. Degeneration of germinal epithelium is accompanied by a decrease in the size of the seminiferous tubules. This is partly compensated for by an increase of intertubular space and partly by a decrease in the size of the testis. No interstitial cell hypertrophy has been found. The experiments were followed during a period of two months. Degeneration was still progressing, and there was no sign of recovery.

Suprarenal Insufficiency.—Banting and Gairns have studied the symptoms, blood chemical determinations and histologic pathology of sixteen dogs which had both suprarenals removed at one operation and of thirty-seven dogs in which an interval of from ten days to six weeks intervened between the removal of the first and second gland. Of the sixteen dogs in which double suprarenalectomy was performed, all died in from eight to fifty-four hours. The average length of survival was 26.8 hours, with the exception of dog 117, which survived 388 hours. Of the thirty-seven dogs in which suprarenalectomy was performed in two stages, twelve dogs survived less than fifty hours; ten survived from fifty to 100 hours; ten survived from 100 to 150 hours; three survived from 150 to 200 hours, and two survived from 200 to 238 hours. The tendency for an increase in the urea and nonprotein nitrogen and the decrease in the percentage of chlorides in the blood are the principal chemical changes. Up to the present, it has been impossible to prevent death in desuprarenalized dogs even when the urea, nonprotein nitrogen and chloride have been maintained at an almost normal level. The outstanding postmortem findings of enlarged lymph glands, degeneration of the liver cords, and nephrosis of the kidney strongly indicate the accumulation of a toxic substance. Further evidence to support this fact is that the blood of dogs that died a true desuprarenal death is toxic. A protein diet with its consequent accumulation of the protein-split products shortens the duration of survival and hastens death in partially desuprarenalized dogs. The fact that histamine is thirty times more toxic after suprarenalectomy suggests that the poison is of a protein-like nature.

Results of Removal of Pineal Body.—Izawa says that complete removal of the pineal body is followed in the albino rat by accelerated growth in the body weight and in the sex organs in both sexes. Normally, therefore, it serves to retard these growth processes in the albino rat. The retardations in the growth of the eye in both sexes and of the hypophysis in the females after operation may be secondary effects.

Controlling Parathyroid Tetany with Ammonium Chloride.—Ammonium chloride, given by mouth to parathyroidectomized dogs in doses of 0.25 to 1.0 Gm. per kilogram of body weight daily, reduces the frequency and severity of tetany attacks. The period of survival of such animals is considerably prolonged, but recovery does not as a rule occur. Death is commonly preceded by a period of several days of anorexia and depression, without tetany. Boyd, Austin and Ducey have not been able to obtain a consistent rise in the blood calcium concentration after the administration of ammonium chloride.

American Journal of Roentgenology and Radium Therapy, New York

15: 497-601 (June) 1926

*Neoplastic Nature of Lymphatic Leukemia: Relation to Lymphosarcoma. W. A. Evans and T. Leucutia, Detroit.—p. 497.
*Skin Reactions After Divided Roentgen-Ray Dosage. W. Stenström and W. L. Mattick, Buffalo.—p. 513.
*Stimulation of Endocrine Glands with Radium. W. Wolf, New York.—p. 520.
*Lymphoblastoma (Hodgkin's Disease) of Sternum. R. Dresser, Boston.—p. 525.
*Metastatic Carcinoma in Bone. J. H. Luscinian, Miami, Fla.—p. 530.
*Diffuse Vertebral Metastasis of Prostatic Carcinoma Without Bony Changes. W. M. Simpson, Ann Arbor, Mich.—p. 534.
Roentgenologic Diagnosis of Benign and Malignant Gastric Tumors in One Patient. L. G. Rigler, Minneapolis.—p. 542.

Neoplastic Nature of Lymphatic Leukemia.—Three cases of lymphosarcoma are described by Evans and Leucutia which in their terminal stages changed into lymphatic leukemia. These three cases are the only lymphosarcomas in a group of sixteen patients treated by deep roentgen-ray therapy during the last four years, which had a fatal termination. In all three cases radiation therapy produced prolongation of life with entire disappearance of the manifest lesions treated, but later extension to the bone marrow occurred. At the time of the bone marrow involvement, all three patients had developed the picture of lymphatic leukemia. Evidence is thus brought that lymphosarcoma, if life is sufficiently prolonged, may change into lymphatic leukemia. This happens as soon as the bone marrow involvement becomes the predominating feature of the disease.

Danger of Divided Roentgen-Ray Dosage.—Stenström and Mattick point out the dangers that are attached to the divided and repeated irradiations with large doses and emphasize the necessity of considering each patient individually.

Stimulation of Endocrine Glands with Radium.—Radium distributed evenly over an area 2 by 4 inches in a specially constructed applicator was used by Wolf to stimulate endocrine glands. A hypothesis has been formulated to serve as a working basis for his experiments and to attempt to explain his own observations, as well as those of other authors. This hypothesis seems to fit in quite well with many empirically found results. All of the important known glands of internal secretion were treated by radium irradiation and definite results were obtained in the case of the suprarenals, thyroid, ovaries, pituitary, testes and parathyroids. In the case of the pineal gland and the islands of Langerhans, the results were too indefinite to warrant a report at this time.

Lymphoblastoma of Sternum.—In a review of ninety-five cases of lymphoblastoma observed in the department of radiation therapy of the Massachusetts General Hospital during the past three years, Dresser found four cases which presented a tumor mass in the region of the sternum. One of these cases, which was very completely studied, is reported in some detail; the others are briefly summarized.

Hyperplastic Metastatic Carcinoma of Bone.—Two cases illustrating an unusual form of metastasis in bone from carcinoma of the breast are reported by Luscinian. There was complete absence of bone destruction; the lesions were represented by hyperplasia alone.

Metastatic Vertebral Carcinomatosis Without Bony Changes.—A case in which a medullary carcinoma of the prostate gland gave no clinical, roentgenographic, or gross anatomic evidence of vertebral metastasis is reported by Simpson. Subsequent microscopic study of decalcified bone sections from the vertebral bodies revealed generalized vertebral carcinomatosis, without bone destruction or bone proliferation.

Annals of Surgery, Philadelphia

83:737-874 (June) 1926

Tularemia: Two Cases. J. B. Flick, Philadelphia.—p. 737.
Treatment of Acute Traumatic Craniocerebral Injuries. A. S. Maclaire. New York.—p. 741.
*Asymmetry of Mandible from Unilateral Hypertrophy. A. Gruca and E. Meisels, Lwów, Poland.—p. 755.
*Prevention of Postoperative Thyrotoxicosis by Postoperative Iodinization. J. L. DeCourcy, Cincinnati.—p. 768.
*Dissection of Axilla in Radical Operations for Cancer of the Breast. J. E. Jennings, New York.—p. 770.
*Accessory Pancreas, Causing Congenital Pyloric Stenosis. K. Hale, Wilmington, Ohio.—p. 774.
*External Fecal Fistula Following Appendicitis. J. B. Deaver, Philadelphia.—p. 782.
Pathogenic Colon. J. W. Draper, New York.—p. 790.
*Primary Tuberculosis of Gallbladder. F. W. Rankin and F. M. Massie, Lexington, Ky.—p. 800.
*Retroperitoneal Tuberculous Lymphadenitis. I. S. Ravdin, Philadelphia. —p. 807.
Mesenteric Lymphadenitis: Eight Cases. A. O. Wilensky and L. J. Hahn, New York.—p. 812.
*Penetrating Bullet Wound of Thoracic Aorta Followed by Lodgment of Bullet in Femoral Artery. G. P. LaRoque, Richmond, Va.—p. 827.
*Disinfection of Hands. H. Lilienthal and J. M. Ziegler, New York. —p. 831.

Asymmetry of Mandible.—Gruca and Meisels report one case and review fourteen cases from the literature. They favor early resection of the articular head of the mandible as the only treatment to be considered.

Prevention of Postoperative Thyrotoxicosis.—As soon as the patient returns to bed, DeCourcy injects 30 minims (2 cc.) of compound solution of iodine by rectum. This is repeated in eight hours. Fluids are given by rectum and encouraged by mouth if they do not cause nausea. He has noticed a remarkable improvement in the convalescence of these patients with an absence of the muscular tremor, tachycardia, restlessness and fever.

Dissection of Axilla in Breast Cancer Operations.—Jennings is of the opinion that the axillary skin should be considered as a dangerous area and removed in routine with the breast, the pectoral muscles, the entire axillary contents *en bloc* and a wide dissection of the deep fascia. He makes an incision which encircles the breast below but extends upward into the axilla so as to include all the axillary skin between the latissimus dorsi behind and the pectorals in front.

Accessory Pancreas Causes Pyloric Stenosis.—Hale suggests that an aberrant pancreas may be the etiologic factor in congenital stenosis of the pylorus. He urges that serial sections be made of any pylorus removed at necropsy showing congenital stenosis to determine whether or not this assumption is correct.

External Fecal Fistula Following Appendicitis.—Deaver refers to 222 cases of postappendical fecal fistula, occurring among 4,655 cases of acute appendicitis, an incidence of slightly less than 5 per cent. Of these 222 fistulas, eighty-six healed spontaneously, while 108 required operative repair. The remainder of the patients were discharged from the hospital having refused operation, or were sent home to recuperate and to return for operation if necessary, but failed to do so. The shortest duration of fecal drainage in this series of cases was in one case in which the opening closed twelve hours after its presence was discovered, while the other extreme shows a patient who had an intermittent fecal fistula for nine years. The surgical procedure necessary for repair was dependent on conditions. In 55.5 per cent of cases, simple inversion of the fistulous opening by a purse-string suture followed by reinforcement by an additional suture line was the only procedure required. In 15 per cent of cases, the condition of the bowel after this procedure was such as to excite doubt as to its regenerative power in the presence of the usual fecal stream, so that an ileocolostomy was performed to short-circuit the affected bowel. Twenty-three per cent of cases presented either multiple fistulas or else the fistula was so large as to preclude closure with maintenance of the lumen of the bowel. Some cases showed extensive ulceration in the part of the bowel surrounding the fistula, so that hope for the recovery of this portion had to be abandoned. These required resection of the bowel varying from a small portion of the cecum to resection of a foot or more of the terminal ileum with the cecum and entire ascending colon. Ileocolostomy was of necessity the last stage of the operation. Of the 108 patients operated on, eighty-nine were discharged from the hospital perfectly healed. In ten instances, there was a recurrence of the fistula. These usually healed spontaneously, but in some instances required further resection of the affected portion of the bowel.

Primary Tuberculosis of Gallbladder.—To the fifteen cases of primary tuberculosis of the gallbladder recounted in the literature, Rankin and Massie add one case.

Retroperitoneal Tuberculous Lymphadenitis.—The chief complaint made by Ravdin's two patients was of a dull pain in the epigastrium which was relieved entirely by removal of the affected glands.

Bullet Wound of Thoracic Aorta.—LaRoque's patient was shot in the left side of the back just internal to the vertebral border of the scapula. The man continued to run a short distance, but his left leg gave way and he was compelled to stop. His chief complaint was of a bullet in his body and of weakness and pain in the left leg. There was a penetrating wound of the chest, a large hemothorax and a bullet wound blockage of the femoral artery. There was no evidence of injury to the retroperitoneal structures. The external iliac-femoral artery was thoroughly examined at operation almost to its origin, and there was no wound of this vessel.

Disinfection of Hands.—The steps of the procedure for disinfecting the hands employed by Lilienthal and Ziegler are as follows: (1) The dry finger tips should be immersed in tincture of iodine, removed immediately and the tincture permitted to dry for five minutes. (2) While this is going on, the remainder of the hands, including the wrists, should be painted with a lampblack mixture up to the limits of the iodine. (3) Then the hands are washed by rubbing with the cleanser (a soap containing 85 per cent water, a small amount of free alkali and various volatile oils) without water for about one-half minute. (4) They are rinsed under hot running water. (5) They should be scrubbed with the cleanser and brush until all traces of lampblack have disappeared, the arms scrubbed as usual at the same time. (6) The hands should be scrubbed with alcohol in the usual fashion. It will then be found that most of the iodine discoloration will have disappeared. The hands may now be dried with sterile towels and the gloves and gown put on.

Archives of Dermatology and Syphilology, Chicago

14:1-110 (July) 1926

*Hereditary Hemorrhagic Telangiectasia. C. M. Williams, New York.—p. 1.
Significance of Cutaneous Stimuli for Protection of Body Against Infection. A. M. Memmesheimer, Cincinnati.—p. 4.
*Infantile Acne Vulgaris. S. Ayres, Jr., Los Angeles.—p. 12.
*Granuloma Inguinale. M. Goldzicher and S. M. Peck, New York.—p. 14.
*Lymphosarcoma. F. C. Combes, Jr., New York.—p. 28.
Lymphogranulomatosis Inguinalis: Three Cases. V. Pardo-Castello, Havana, Cuba.—p. 35.
Fox-Fordyce Syndrome. H. Goodman, New York.—p. 46.

Fordyce's Condition of Penis. W. H. Goeckerman, Rochester, Minn. —p. 50.
Schamberg's "Peculiar Progressive Pigmentary Disease of Skin." L. K. McCafferty, New York.—p. 53.

Hereditary Hemorrhagic Telangiectasia.—Williams reports four cases of hemorrhagic telangiectasia complete in every respect, and a fifth in which only the family history is lacking, all observed within four weeks, of a disease which he says is not mentioned in the majority of textbooks on dermatology, and which is supposedly so rare that only about thirty-two families are reported in medical literature. The essentials of the disease are: (1) The occurrence of nosebleed in childhood, often recurring throughout the life of the patient, and sometimes associated with bleeding from other mucous membranes, or even, after traumatism, from the skin. The bleeding may decrease as the patient grows older, or may become more and more serious and finally prove fatal. (2) The development of telangiectasiae, sometimes as dilated capillaries, sometimes as a network of dilated venules, more characteristically as spider nevi; occurs sometimes in youth, more often in adolescence or adult life, and usually increases with the passing years. (3) The occurrence of these symptoms in several members of the family. Usually the same individual presents both groups of symptoms, but sometimes one group or the other may be missing in an individual case.

Infantile Acne Vulgaris.—Three cases of acne vulgaris occurring in infants are reported by Ayres. All the patients were boys. Two of the patients were being fed on breast milk exclusively at the time the eruption began. All of the patients were otherwise normal, except for slight constipation in one and later a brief attack of acute eczema, seborrhea of the scalp in one, and a brief attack of diarrhea in one.

Granuloma Inguinale.—Seven cases of granuloma venereum have been studied by Goldzicher and Peck. The diagnosis was made by the characteristic clinical appearance; the demonstration of *Bacillus venereogranulomatis* in smear, section and culture and complement fixation and allergic skin reactions. The best therapeutic results were obtained by the combined use of *B. venereogranulomatis* vaccine, with antimony and potassium tartrate.

Lymphosarcoma.—The first of Combes' patients presented multiple tumors which histologically bore a definite resemblance to mycosis fungoides, although clinically the lesions were typical of lymphosarcoma. In the second case, the lesion was single, and resembled the Spiegler-Fendt sarcoid. In the first case the lesions all responded promptly to filtered roentgen-ray therapy, a complete resolution occurring within three months, but a few months later the patient began to complain of increasing weakness and dyspnea. Physical examination of his chest revealed enlargement of the mediastinal and peribronchial lymph glands. Deep roentgen-ray therapy brought about no improvement, and the patient died from acute cardiac insufficiency within six weeks. In the second case temporary improvement followed the administration of solution of potassium arsenite (Fowler's solution) internally, but the patient died nonetheless.

Archives of Surgery, Chicago

13: 1-152 (July) 1926

*Chronic Duodenal Ileus. C. C. Higgins, Cleveland.—p. 1.
*Puncture Wounds of Cerebellum. H. L. Foss, Danville, Pa.—p. 43.
*Growth Disturbances Following Resection of Joints. S. L. Haas, San Francisco.—p. 56.
*Primary Congenital Megalo-Ureters. J. S. Eisenstaedt, Chicago.—p. 64.
*Sarcoma of Stomach. C. E. Farr, New York.—p. 75.
*Partial Tracheal Obstruction: Effects on Circulation and Respiration. A. Blalock, T. R. Harrison, Nashville, Tenn., and C. P. Wilson, Boston.—p. 81.
*Postoperative Colon Bacilluria. C. C. Pinkerton, Akron, Ohio.—p. 96.
Spontaneous Dislocation of Tendon of Long Head of Biceps Brachii: Four Cases. A. W. Meyer, Palo Alto, Calif.—p. 109.
*Pulmonary Complications Following Anesthesia and Operation. I. S. Ravdin and R. A. Kern, Philadelphia.—p. 120.
Review of Urologic Surgery. A. J. Scholl, Los Angeles, E. S. Judd, Rochester, Minn., L. D. Keyser, Roanoke, Va., G. S. Foulds, Toronto and J. Verbrugge, Antwerp, Belgium.—p. 126.

Chronic Duodenal Ileus.—A study of fifty-seven cases has convinced Higgins that chronic duodenal ileus is not a rare condition, and there are undoubtedly many cases that have not been diagnosed. On account of the severe headache associated with this condition, a diagnosis of migraine is usually made; some patients have been treated for migraine for years and have passed through the clinics of excellent diagnosticians in a search for relief. In all cases of severe headache associated with vomiting, a careful examination of the duodenum should always be made. In cases in which the dilatation is insufficient to produce duodenal stasis and is associated with gastroptosis, an effort should be made to secure relief by nonoperative measures. If the dilatation is marked and stasis with antiperistalsis is present, a duodenojejunostomy should be performed. The mortality for duodenojejunostomy is practically nil, and excellent results may be expected. Resection of the right colon is indicated in few cases and should be performed only as a last resort. Gastro-enterostomy should not be performed, as the stasis in the duodenum is not relieved and a vicious circle is established. A careful roentgen-ray examination of the duodenum should be made and a correct preoperative diagnosis established. A comprehensive history and a careful physical examination may suffice to make a correct diagnosis which, however, should be verified by roentgen ray. Dilatation of the duodenum is a clinical entity, and a characteristic picture is present in most of the cases.

Puncture Wound of Cerebellum.—Foss relates the case of a boy, aged 2½ years, who sustained a penetrating wound of the cerebellum from a crochet hook entering the jugular foramen by way of the mouth. The hook was removed, and the patient recovered. The hook had traversed the lateral wall of the pharynx, had entered the jugular foramen, and had penetrated the left cerebellar hemisphere to a depth of 5 cm. This is said to be the only case of the kind on record.

Growth Disturbances Following Joint Resection.—Haas shows experimentally that a careful resection of the knee joint, in which the entire articular cartilage and a thin layer of adjoining bone is removed, will cause practically no disturbance in length growth. It is important not to injure the epiphyseal cartilage plate and to refrain from passing fixation sutures through the actively growing columns of cartilage cells. It is advisable not to strip up the soft parts too near to the epiphyseal cartilage plate because of the chances of injuring its blood supply and thereby causing some growth cessation.

Primary Congenital Megalo-Ureters.—The two cases of primary congenital megalo-ureters reported by Eisenstaedt occurred in girls, aged 5 and 7½ years, respectively. Both girls entered the hospital with the history of dysuria and increased frequency of urination since earliest childhood. The younger child died. A complete necropsy report of the intra-abdominal viscera is given. The elder child is alive and to date in excellent condition, except for the pathologic condition of the urinary tract.

Sarcoma of Stomach.—Of the two cases of sarcoma of the stomach presented by Farr, one, of the round cell type near the pylorus, closely resembled in its clinical aspects a calloused ulcer; the other, of the spindle cell type growing apparently from the musculature of the anterior wall of the stomach near the cardia, gave no clinical symptoms whatever until the day before operation. The patient with the round cell sarcoma who had a pylorectomy performed has made an apparently complete recovery. The patient with the spindle cell tumor, whose operation was necessarily incomplete, had a relapse after a year and died in less than two years.

Effects of Partial Tracheal Obstruction.—The effects of partial tracheal obstruction on the blood gases, blood reaction and volume flow was studied experimentally in dogs by Blalock et al. The results of the examinations are reported.

Postoperative Colon Bacilluria.—An attempt was made by Pinkerton to determine the importance of laboratory reports that show *Bacillus coli* in the urine of patients following operation. An unselected series of 130 general surgical cases was studied to determine by culture the incidence and significance of postoperative colon bacilluria. It was found that the colon bacillus appears in the urine of a certain percentage of male and female patients who present themselves for surgical operation. The same organism appears in an appreciably larger percentage after operation, often without subjective or objective symptoms of a urinary tract infection. Among female surgical patients of this series, the colon bacilluria was present from three to five times more often than among the males. Colon bacilli occurring in the urine in abundance after operation is a presumptive sign of urinary tract infection, but in the absence of other confirmatory evidence does not always account for postoperative complications. Gynecologic patients, as a class, have colon bacilli present in the urine after operation probably more often than any other class of surgical subjects.

Pulmonary Complications Following Anesthesia.—Among 5,966 operations, reviewed by Ravdin and Kern, sixty-nine respiratory complications after anesthesia occurred, an incidence of 1.15 per cent. Fifty-six cases presented lesions, lobar pneumonia, bronchopneumonia and bronchitis, in which infection played a part. Fourteen of the fifty-six patients gave a history of an acute respiratory infection before operation, and in nine of these the operation was of an emergency character. This larger group showed a definite seasonal incidence, while the thirteen cases of the smaller group, including embolism and atelectasis, occurred scattered throughout the year with no suggestion of a seasonal variation.

Boston Medical and Surgical Journal

195: 1-60 (July 1) 1926

*Acute Coronary Occlusion. L. Wolff and P. D White, Boston—p. 13.
Imperforate Anus. S M. Fitchet, Boston—p 25.
Internist and Ophthalmoscope. H. A. Houghton, New York—p. 31.
Trail of Typhoid Carrier. F G Curtis, Newton, Mass—p 35.
Umbilicus as Abdominal Landmark. S R Meaker and R. S-G Ho Hsieh, Boston—p. 36
Dr. Guillotin and His Machine. W. P. Coues, Brookline, Mass.—p 37.

Acute Coronary Occlusion.—A study of acute coronary occlusion, based on nineteen cases of coronary thrombosis and four cases of coronary embolism, and a review of the literature, are presented by Wolff and White. In the literature the terms coronary occlusion, coronary thrombosis, coronary embolism and cardiac infarction are used interchangeably, or at least without sufficient regard for the exact meaning or significance of these terms, thus leading to confusion. The authors have chosen the term acute coronary occlusion, including all cases of sudden closure in which, as a rule, cardiac infarction occurs. Gradual coronary occlusion, in which cardiac infarction may or may not occur, is not discussed.

Journal of Bacteriology, Baltimore

11: 393-448 (June) 1926

Surface Tension and Bacterial Growth. W M Gibbs, H W. Batchelor and T. N Sickels, Moscow, Idaho—p 393
Reduction of Selenium Compounds by Sporulating Anaerobes. I. C. Hall, Denver—p. 407
Utilization of Salts of Organic Acids by Colon Aerogenes Group S. A. Koser, Urbana, Ill.—p 409.
Production of Catalase by Anaerobic Organism. J M Sherman, Ithaca, N Y—p 417
Studies in Microbic Heredity VII Fungi Found in Blastomycosis Hominis. R. R. Mellon, Rochester, N. Y—p. 419

Journal of Comparative Neurology, Philadelphia

40: 409 498 (June) 1926

Giant Nerve Fibers of Earthworm H. B Stough, Boston—p. 409
Resonance Theory of Weiss S. R Detwiler, Boston—p 465.
Primitive Lines of Amblystoma Jeffersonianum F. L. Landacre, Columbus, Ohio—p. 471.

Journal of Experimental Medicine, Baltimore

41: 1-145 (July 1) 1926

*Filter Passing Virus Obtained from Dermacentor Andersoni. H. Noguchi, New York—p 1
Organism Associated with Specific Infectious Cystitis and Pyelonephritis of Cows. F S Jones and R. B Little, Princeton, N. J—p 11.
*Immunologic Studies with Herpes Virus: Herpes Encephalitis Problem. H. Zinsser and F Tang, Boston—p 21
Skin Response of Rabbits to Nonhemolytic Streptococci I. C. H. Andrewes, C. L. Derick and H F. Swift, New York—p. 35.
Id II. Is Secondary Reaction an Arthus Phenomenon? C. L. Derick and C H Andrewes, New York—p. 55
Filling and Emptying of Gallbladder. G. H. Copher, S. Kodama and E. A Graham, St. Louis—p 65.
Relation of Reticulo-Endothelial System to Blood Platelet Count. H. Koster, New York.—p 75.
Relation Between Organ Weights and Obscure Lesions in Apparently Normal Rabbits. W. H. Brown, L. Pearce and C. M. Van Allen, New York.—p. 85.
Biologic Classification of Encapsulatus Pneumoniae (Friedländer's Bacillus). L A. Julianelle, New York—p. 113.
Rôle of Reticulo Endothelial System in Immunity. III. Production of Active and Passive Anaphylaxis in Blocked Animal. C. W. Jungeblut and J. A. Berlot, Albany, N. Y.—p. 129.

Virus Obtained from Tick.—An invisible, filter-passing virus, pathogenic for the guinea-pig and capable of cultivation on special mediums for at least seven generations, has been isolated by Noguchi from a tick of the species *Dermacentor andersoni.* One of two monkeys (*Macacus rhesus*) inoculated became infected, and in one rabbit the result was negative. The virus has been transmitted from infected guinea-pigs to ticks, as also in one instance by tick feeding from an infected tick to a guinea-pig. The presence of the virus in the tick is more easily demonstrated by the inoculation of guinea-pigs with a suspension of the tick viscera. Continuous high fever (from 104.5 to 106.5 F.) and enlargement of the spleen are the chief symptoms of the infection in guinea-pigs. After the febrile attack, the guinea-pigs are not susceptible to reinoculation with the cultured virus but are subject to infection with the virus of spotted fever, and vice versa.

Herpes-Encephalitis Problem.—Experience forces Zinsser and Tang to the conclusion that no valid proof exists on which can be based an assertion concerning the identity of the virus of herpes with that of lethargic encephalitis. Either the two viruses are entirely unrelated, or else prolonged sojourn in the central nervous system of man attenuates the virus for rabbits to an extent analogous to that in which rabies virus is attenuated for man by passage through rabbits.

Journal of Infectious Diseases, Chicago

39: 1-88 (July) 1926

*Antibody Response After Immunotransfusion in Malignant Endocarditis. K M Howell, B. Portis and D. A. Beverley, Chicago.—p 1.
*Apparent Mutation of Streptococci from Acute Malignant Endocarditis. K M. Howell and D A Beverley, Chicago—p. 12
Differences in Peroxide Production and Methemoglobin Formation of Green (Alpha) Streptococci. E. Valentine, San Francisco—p 29.
Rôle of Bacteriophage in Streptococcus Infections L. O. Dutton, Memphis, Tenn.—p. 48.
*Bactericidal Property of Whole Blood of Women Infected with Gonococcus. G. H. Robinson, Pittsburgh.—p. 61.
*Typhoid Vaccination by Mouth V. Burke and L. Barnes, Pullman, Wash.—p 67
Glutathione Content of Animal Tissues with Reference to Tuberculosis. N Uyei, Denver—p. 73.
*Investigations on Rocky Mountain Spotted Fever in Colorado. F. E. Becker, Denver.—p. 82.

Immunotransfusion in Malignant Endocarditis.—In a case of acute malignant endocarditis, both *Streptococcus hemolyticus* and *S viridans* were isolated by Howell et al. from the blood on three different occasions. During a period of five months, the patient received twelve transfusions of immune whole blood Before immunotransfusion was begun, his blood serum contained no agglutinin for the streptococci isolated. The agglutinin titer of the recipient's blood serum also increased after each transfusion, as a rule running parallel with the agglutinin titer, and reaching values higher than those of the transfused blood. Complement-fixing antibodies also increased, but appeared later than agglutinin and opsonin and fluctuated more irregularly. The increase in specific antibodies of the recipient's blood, both as compared with its own original content and with that of the immune donors, is interpreted as evidence of the development of active as well as passive immunity as the result of immunotransfusion.

Mutation of Streptococci.—From the blood in a case that was clinically one of acute malignant endocarditis, Howell and Beverley isolated on three successive occasions two bacteriologically distinct organisms, *Streptococcus hemolyticus* and *S. viridans.* The two strains were morphologically different; the morphologic differences have remained constant over a period of two years. The sugar reactions, which were also different, have remained constant for the same period. Protection experiments with immune serums indicated that the two strains were different.

Bactericidal Property of Blood in Gonorrheal Infection.—The whole blood of normal persons, Robinson says, possesses but little bactericidal action on the gonococcus, but the blood of women having a gonococcal salpingitis exerts a strong bactericidal action on the gonococcus, most marked on the infecting strain, indicating a tendency toward strain specificity. This reaction is not dependable enough with heterologous strains to warrant its use as a diagnostic procedure. Treatment of patients having chronic gonococcal infection with either stock or autogenous vaccines would seem theoretically to offer little hope of success.

Typhoid Vaccination by Mouth.—Experiments were made by Burke and Barnes to determine whether typhoid proteins were absorbed unaltered from the digestive tract as determined by the appearance of agglutinins; whether the agglutination titer would vary with the method of preparing the vaccine; whether "per os" vaccination is as effective as the subcutaneous method in stimulating the production of typhoid agglutinins and to test the theory of increased cellular impermeability of the intestinal mucosa following the oral administration of typhoid vaccine. On the whole, the results obtained were not satisfactory.

Rocky Mountain Spotted Fever in Colorado.—According to Becker, Rocky Mountain spotted fever exists in Colorado with an average annual incidence of more than 2.57 cases and a mortality of 1.5 cases. The mortality rate lies between that of Idaho and the Bitter Root Valley in Montana. The disease is widely spread throughout the mountainous regions of the state with certain centers more heavily infected than others. The disease in several patients and in guinea-pigs infected from these patients and from wood ticks differed from the typical Montana form in the exhibition of marked gastro-intestinal symptoms and lesions. Many micro-organisms, other than *D. rickettsi*, are found in local ticks. Certain symptoms of malaise, not typical of Rocky Mountain spotted fever, frequently follow tick bites in Colorado. Evidence supports the view that they are due to the tick bite, but are not a part of the clinical picture of Rocky Mountain spotted fever.

Journal of Nervous and Mental Disease, New York

63: 553-668 (June) 1926

Bergson's Conceptions as Applied to Psychopathology. E. Minkowski, Paris.—p. 553.
***Tryparsamide in Treatment of Late Neurosyphilis.* J. R. Moore and I. C. Sutton, Los Angeles.—p. 569.
*Psychology of Essential Epileptic. L. P. Clark, New York.—p. 575.
Classification of Psychoses. L. B. Alford, St. Louis.—p. 586.

Tryparsamide in Late Neurosyphilis.—In the selection of patients for this treatment, it is the impression of Moore and Sutton that those who have received prolonged and intensive saturation with mercury and the arsphenamines show more striking gains than those who have received no preparatory treatment. The previously treated patient is also less subject to the Herxheimer-like flare-ups so often seen during the first course of tryparsamide injections. It is emphasized that tryparsamide is primarily a resistance builder and a healer of lesions, but not a spirocheticide. This fact precludes its use in early syphilis. Its greatest worth is in general paralysis and late tabes dorsalis, and in selected cases of central nervous system syphilis which have resisted systematic and combined intravenous and intraspinal therapy with the arsphenamines.

Psychology of Essential Epilepsy.—As a tentative formulation, Clark states that the essential epileptic person is intrinsically a specific pattern of oral and anal erotic in whom the clinical phase presented by him is the reaction formation of narcism known as the epileptic makeup; that the excess formation of the latter produces a rigidity and inelasticity of the personality incompatible with flexible living. Hence the explosive fit, the latter being a necessary corollary to the state as a whole.

Kansas Medical Society Journal, Topeka

26: 173-206 (June) 1926

Our Novitiates. F. Brown-Sherbon, Lawrence.—p. 178.
Varicose Veins and Ulcers of Leg. L. F. Barney, Kansas City.—p. 181.
Metropolitan Medical School of Future. C. F. Nelson, Lawrence.—p. 185.

Medical Journal and Record, New York

124: 1-60 (July 7) 1926

"John Bull" Spirit of Medicine. H. Crichton-Miller, London.—p. 1.
Acute Pericarditis. H. Elwyn, New York.—p. 6.
Benzyl Benzoate. D. I. Macht, Baltimore.—p. 10.
Dual Personality Apropos of Unusual Case of Amnesia. A. Gordon, Philadelphia.—p. 12.
Reducing Mortality from Carcinoma of Rectum. A. A. Landsman, New York.—p. 15.
Treatment of Cancer of Rectum. C. J. Drueck, Chicago.—p. 16.
*Idiopathic Paralysis Agitans. T. C. Fong, Washington, D. C.—p. 18.
Modus Operandi of Therapeutic Agents in Treatment of Infections. J. W. Wiltsie, Binghamton, N. Y.—p. 20.
Gynecologic Operation in Insanity. E. McDonald, Philadelphia.—p. 23.
*Puerperal Infection. D. H. Bessesen, Minneapolis.—p. 27.
*Early Diagnosis of Pregnancy and Prognosis of Sex. R. Weiss, Berlin.—p. 33.
Sedimentation Test in Gynecology. I. Smiley, New York.—p. 34.
*Caffeine in Breast Milk of Coffee and Tea Drinkers. R. R. Irvin, Pittsburgh.—p. 37.
Legacy of Greece to Galen. H. J. Wright, Pleasantville, N. Y.—p. 39.

Idiopathic Paralysis Agitans.—Fong reports a case of idiopathic paralysis agitans occurring in a white man, aged 35, who presented practically all of the cardinal symptoms and signs, and in whom no causation for the disease could be established. It is rather rare to see this disease occurring before the fifth decade of life.

Etiology of Puerperal Infection.—Bessesen suggests that the vaginal flora is the etiologic factor in a large number of puerperal infections. Such infection occurs during the second stage of labor. During uterine contraction, the cervix pulls away, exposing the presenting point of the fetus. As dilatation becomes more complete, this presenting point is contaminated by the vaginal mucosa with which it comes in contact. This is more marked when dilatation is complete and pains of a bearing down nature appear. At this time, the head of the fetus is forced down into the bulging perineum, while the cervix and lower uterine segment are retracted by that action of the uterus which is characteristic of the second stage of labor. During relaxation, the perineum forces the head back and the relaxed uterus allows the return of the cervix and lower uterine segment to their original position. Thus the contaminated head, either covered or not covered by the membranes, enters the uterus. This process is repeated as long as the second stage lasts, and so it is that in long labors infections are more common and more severe, often fatal. With each downward descent of the fetus into the vagina, a higher point of the fetal surface is contaminated by the bacteria which have previously been drawn into the uterus, and when the fetus again rises into the uterus, a higher point of the uterine interior is contaminated. Infections may occur with short second stage, where virulent bacteria are present in the vagina. This mechanism also pertains to the Credé expression of the placenta. Dry labor increases the number of infections owing to the prolonged action of the fetus descending into the vagina and ascending into the uterus. Any foreign body which passes through the infected vagina upward into the uterus, whether the cord, a part of the child, the hand of the obstetrician or an instrument, will increase these possibilities for puerperal infection. Prophylactic treatment is necessary to prevent the appearance of puerperal infection.

Early Diagnosis of Pregnancy.—Weiss describes the Paul Hirsch serologic test which takes its origin from the fact that naphthochinone sulphate of sodium gives a very characteristic dark coloration with amino groups, the intensity of which depends on the amount of the amino groups contained in the solution.

Caffeine in Breast Milk.—Irvin has examined the breast milk of coffee and tea drinkers for caffeine, and has constantly obtained a substance possessing the characteristics of caffeine. In crystalline shape, solubility in water and chloroform and in its capacity to be sublimed, this substance is highly suggestive of caffeine, or possibly a derivative thereof. Since it was found only in traces in human milk, its absolute identification was extremely difficult. These caffeine-like crystals were found to be absent in the breast milk of a woman who drank no coffee, tea or other alkaloid containing substances.

Minnesota Medicine, St. Paul

9: 291-364 (June) 1926

Dynamics of Personality. C. E. Riggs, St. Paul.—p. 291.
New Orientation of Psychoneuroses. C. R. Ball, St. Paul.—p. 297.
*Spontaneous Meningeal Hemorrhage: Seven Cases. E. M. Hammes, St. Paul.—p. 305.
Some Psycho-Analytic Considerations. F. Whitmore, St. Paul.—p. 311.
*Roentgen Ray and Metastases in Breast Cancer. W. A. Coventry, Duluth.—p. 316.
Ulcer of Duodenum. E. S. Judd, Rochester.—p. 320.
Oxyperitoneum. R. L. Laney, Puposky.—p. 323.
*Massive Collapse of Lung. L. G. Rigler, Minneapolis.—p. 326.
Rest in Treatment of Pulmonary Tuberculosis. F. F. Callahan, Pokegama.—p. 333.
*Presence of Diphtheria Bacilli in Nasal Cavity of New-Born. S. Amberg, Rochester.—p. 341.
Principles of Successful Cancer Surgery. W. E. Ground, Superior, Wis.—p. 342.

Spontaneous Meningeal Hemorrhage.—The characteristic symptoms of spontaneous meningeal hemorrhage are a hemorrhagic spinal fluid and evidence of meningeal irritation. Hammes asserts that this syndrome is sufficiently well defined to enable one to make the correct diagnosis. Although the clinical course is frequently a stormy one, the prognosis is often not as grave as the symptoms would indicate.

Roentgenotherapy of Breast Cancer and Metastases.—Coventry is becoming more and more convinced that postoperative roentgen-ray treatment of breast cancer cases is effectual only in preventing local recurrences and relieving pain, and that from clinical experience it does not prevent metastasis but has a tendency to scatter metastases and hurry the end.

Massive Collapse of Lung.—Nine cases of massive collapse of the lung are reported by Rigler: (1) uncomplicated, unilateral, postoperative massive collapse following cholecystectomy under local anesthesia in one case, and appendectomy in two cases; (2) two cases of postoperative massive collapse complicated by pneumonia, in one of which empyema also developed; (3) three cases of posttraumatic massive collapse, two following fracture of the spine and ribs, and (4) one case of alternate collapse and clearing extending over a long period of time with eventual recovery. This was also posttraumatic.

Diphtheria Bacilli in Nasal Cavity of New-Born.—Cultures were taken by Amberg from the nasal cavity of 421 new-born infants. The presence of diphtheroid bacilli was reported in seventeen instances; in one instance a doubtful bacillus was reported; in another there was a bacillus which morphologically had to be classified as a diphtheria bacillus. When more than one culture was taken, the diphtheroid bacilli happened to be found at only one examination. No efforts were made to determine the flora, but usually staphylococci were found, more rarely streptococci and other microorganisms, and there was a small number of inoculations without growth. Occasionally, there was an infant with rhinitis or conjunctivitis. In the latter cases, no microorganisms were demonstrable either by smear or by culture. Examination for inclusion bodies was not made.

New York State Journal of Medicine, New York

26: 585-626 (July 1) 1926

Cooperation Between State Medical Society and Health Agencies. G. M. Fisher, Utica.—p. 588.
Impressions of Cattaraugus County Health Department. E. P. Kolb, Heltsville.—p. 589.
Cattaraugus County Health Demonstration. A. L. Runals, Olean.—p. 591.
County Tuberculosis Work. R. E. Plunkett, Albany.—p. 592.
Value of Cattaraugus County Health Demonstration to State. E. M. Clark, Albany.—p. 593.
County Nursing Work. M. Kuhlman, Albany.—p. 593.
Demonstration and Boards of Supervisors. S. P. Hull, Petersburg.—p. 594.
Cattaraugus County Health Demonstration. A. Newsholme, England.—p. 595.
What is Health Work? H. Folk, New York.—p. 598.
Statistical Aspects of Demonstration. E. C. Burnham, New York.—p. 600.
Tuberculosis Work. W. C. Jensen, Olean.—p. 602.
Nutritional Work in Cattaraugus County. J. C. Gebhart, New York.—p. 604.
How to Conduct Campaign for County Health Department. G. J. Nelbach, New York.—p. 607.
Spiritual Value of Cattaraugus County Health Demonstration. J. A. Kingsbury, New York.—p. 608.
Impressions of Work. C. W. Munger, Valhalla.—p. 608.
Id. A. W. Towne, Syracuse.—p. 609.
Id. H. A. Brown, Buffalo.—p. 610.
From Pastor's Point of View. Michaelson, Ellicottville.—p. 610.
Impressions of Demonstration. E. P. Kolb, Holtsville.—p. 611.
Year of Progress. S. A. Douglas, Olean.—p. 612.

Southern Medical Journal, Birmingham, Ala.

19: 413-500 (June) 1926

*Hypertension. J. H. Gibbes, Columbia, S. C.—p. 413.
*Arterial Hypertension. T. P. Sprunt, Baltimore.—p. 416.
Treatment of Colic, Habitual Regurgitation and Sleeplessness in Early Infancy. T. C. Hempelmann, St. Louis.—p. 422.
*Periarteritis Nodosa. W. H. Harris, New Orleans.—p. 426.
Blastomycosis: Eight Cases. C. M. Hamilton, Nashville, Tenn.—p. 431.
Value of Roentgen-Ray Examination in Diseases of Esophagus. J. Paul and D. Y. Keith, Louisville, Ky.—p. 435.
Problems of Milk Production in South. J. J. Durrett and C. L. Isley, Jr., Memphis, Tenn.—p. 438.
Modern City Health Department Practice and Medical Profession. A. H. Flickwir, Houston, Texas.—p. 442.
Enervation of Stomach. J. A. Crisler, Jr., Memphis, Tenn.—p. 446.
Surgical Care of Toxic Thyroid. L. W. Frank, Louisville, Ky.—p. 450.
Goiter: 235 Cases. S. O. Black, Spartanburg, S. C.—p. 453.
Tetanus. J. M. Poer, West Point, Ga.—p. 456.
Application of Modern Urologic Diagnostic Methods in Pediatrics: Cases. H. W. McKay, Charlotte, N. C.—p. 460.
*Anaerobic Streptococci: Rôle in Puerperal Infection. O. Schwarz and W. J. Dieckmann, St. Louis.—p. 470.
Interpretation of Railway Signals by Sense of Color. A. E. Chace, Texarkana, Ark.—p. 479.
*Pituitary Body Tumors. L. Daily, Houston, Texas.—p. 485.
Prevalence of Sinus Infection. M. A. Lischkoff, Pensacola, Fla.—p. 493.

Analysis of Hypertension Cases.—Forty-nine of Gibbes' patients complained of symptoms that might be interpreted as referable to the cardiovascular renal system, while fifty-one presented complaints that would be commonly referred to other organs or systems of the body. The family history of cardiovascular renal disease was interpreted as positive in fifty-five cases, negative in twenty-three, and classed as unsatisfactory in twenty-two. The past history seems to be of little importance. The general symptomatology, aside from the presenting complaint and the present illness, was of interest because of the relatively high incidence of so-called digestive symptoms, constipation, headache or vertigo, and dyspnea and palpitation of the heart. A positive history of the nocturnal passage of urine in seventy-two patients is striking, stamping this symptom as the most important lead furnished by the patient as indicating the existence of hypertension. The data collected on physical examination show that cardiac hypertrophy is almost a part of the picture of hypertension, that focal infections are almost universally associated with it, and that hyperthyroidism is practically no part of it. Only one patient failed to show albumin in the urine. In 82 per cent of the improved cases, focal infections were found and removed; in 30 per cent of the unimproved cases this was done, and in only 11 per cent of the cases in which death occurred were focal infections eliminated.

Analysis of Arterial Hypertension Cases.—In arriving at a prognosis in cases of arterial hypertension, Sprunt says, the condition of the arteries is the most important prognostic sign. Patients with no sign of arterial change may be expected to do well. Those with normal urine and those with normal aortas in general show a rather favorable prognosis. Patients with marked retinal changes, with any sign of myocardial insufficiency, precordial pain or renal insufficiency, may be expected to live only a very few years. From the standpoint of age, the presence of a hypertension in the very young is of rather graver significance than in the very old. The onset of hypertension during the menopause in women presents the most favorable prognosis of all.

Periarteritis Nodosa.—Harris is of the opinion that the augmentation of the name to periarteritis nodosa aneurysma thrombotica would serve as an aid in the gross pathologic diagnosis of the disease. Basing his assumption on his experimental results, he regards periarteritis nodosa as a specific infectious disease which can be transmitted to the rabbit. The excitant of the induced lesions can be passed through a Berkefeld N filter and is to be included in the group of filter passers.

Anaerobic Streptococci in Puerperal Infection.—Schwarz and Dieckmann believe that anaerobic streptococci are frequently the causative factors of puerperal infection, that they cause chiefly a local foul smelling lochia and in their noninvasive state may be regarded as saprophytes. However, under certain favorable conditions, such as in the thrombi of the uterine veins, they subsequently reach the blood stream and cause serious and even fatal local complications. If the organisms are present in the uterus in overwhelming numbers, they may be carried to the peritoneum by way of the lymphatics. In the treatment of these cases, the authors recommend thorough cleansing of the uterus. In the event of a blood stream infection, they recommend early and frequent transfusion to combat the anemia and bring up the patient's resistance. In order that the real significance of this organism can be appreciated, it is necessary in all cases of suspected puerperal infection to grow uterine cultures both aerobically and anaerobically, in order that the incidence and seriousness of this organism can be better appreciated.

Pituitary Body Tumors.—Daily believes that pituitary body tumor is a much more common disease than is ordinarily believed to be the case and that its surgery is in the domain of the rhinologist.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

7: 95-160 (June) 1926

*Fever, Infections and Thyroid-Suprarenal Apparatus. W. Cramer.—p. 95.
Duodenal Regurgitation: Control of Pylorus. F. L. Apperly.—p. 111.
*Serum Magnesium in Relation to Menstruation: Calcium. E. Watchorn.—p. 120.
*Anticoagulant Action of Herudin. J. O. W. Barfratt.—p. 127.
*Effect of Clotting and of Sodium Citrate on Bactericidal Power of Blood. V. G. Walsh and D. Harmsworth.—p. 129.
*Tetanus in Horse Subsequent to Prophylactic Immunization: Revaccination. A. T. MacConkey.—p. 133.
*Physiologic Action of Colloids. II. D. B. Steabben.—p. 141.
*Van den Bergh Reaction in Diabetes Mellitus. I. M. Rabinowitch.—p. 155.

Fever, Infections and Thyroid-Suprarenal Apparatus.—Evidence is presented by Cramer to show that an aseptic fever is the result of certain pathologic conditions involving hyperactivity of the thyroid and the suprarenal glands. Examples are exophthalmic goiter and suprarenal hemorrhage. Clinically, these conditions closely resemble bacterial infections, and are frequently mistaken for such. Suprarenal hemorrhage, in particular, is hardly if ever diagnosed during life, and is usually mistaken for an acute bacterial infection. It is probable that many of the so-called pyrexias of unknown origin are due to disturbances of these two glands. Some therapeutic applications of this conception are discussed, and it is suggested that it affords an explanation for the nonspecific vaccine and protein therapy.

Serum Magnesium and Menstruation.—Fourteen women were examined by Watchorn. Women who had no premenstrual pain or other symptoms showed no change in serum magnesium. There was an increase in the serum magnesium when pain was present, and a decrease when there was premenstrual malaise without pain. Taking magnesium acetate during the week preceding menstruation apparently caused ovarian irritation, but was on one occasion followed by an unusually normal menstrual period. Very little change, or no change at all, was found in the serum calcium.

Anticoagulant Action of Herudin.—Experiments made by Barratt to determine the effect of herudin on fibril formation in citrated fibrinogen solution (blood plasma) show that herudin: (1) acts on thrombin, which becomes diminished in amount, and (2) is without action on fibrinogen.

Bactericidal Power of Blood.—The effects of sodium citrate and of coagulation on the bactericidal power of the blood were investigated by Walsh and Harmsworth. The coagulation of blood enormously increases its bactericidal power. Citrate inhibits the growth of staphylococcus in blood.

Prophylactic Immunization Against Tetanus.—Experimental and clinical data are supplied by MacConkey which suggest that a course of prophylactic inoculations of tetanus toxin, totaling some 400,000 minimal lethal doses, cannot be relied on in every case to protect horses against tetanus for more than three years. About this period the antitoxin content of the blood would appear to be on the borderline of safety.

Physiologic Action of Colloids.—It is shown by Steabben that the injection of colloidal substances into normal rabbits may temporarily increase phagocytosis, and also the bactericidal power of whole blood and serum, but these effects are not constant. Experimentally infected animals lose the power to respond to this stimulation as the infection advances. The injection of a colloidal substance into an animal suffering from an acute infection may cause a fatal reaction, analogous to "shock"; if the animal is in an advanced chronic stage of disease the injection of a colloid may cause a marked focal reaction, and appears to aggravate the condition; in the early stages such an injection seems temporarily to delay the course of infection.

Van den Bergh Reaction in Diabetes.—The van den Bergh reaction was applied by Rabinowitch to a group of persons with biliary disease. The incidence of positive reactions found suggested that the liver escapes injury in a minority of cases only. Of a group of 130 diabetic patients, positive van den Bergh reactions were found in thirty-four. Rabinowitch suggests that the routine performance of the van den Bergh test may be of assistance in the prevention of diabetes. As with all other laboratory tests, it is of value only when properly interpreted. For the latter purpose, correlation with the clinical picture is essential in order to exclude conditions other than gallbladder disease and pancreatitis (hemolytic processes, heart failure, etc.) which may cause positive reactions.

British Medical Journal, London

2: 1-50 (July 3) 1926

Epilepsies. S. A. K. Wilson.—p. 1.
*Diet and Calcium Content of Saliva. C. L. Pattison.—p. 6.
*Pleural Effusion Complicating Pneumothorax. L. S. T. Burrell.—p. 8.
*Case of Chronic Obstructive Jaundice. F. P. Weber.—p. 9.
Three Cases of Obstruction at Vesical Outlet After Prostatectomy. W. K. Irwin.—p. 10.
*Agglutination of Gonococcus in Man. C. E. Jenkins.—p. 11.
Carcinoma of Prolapsed Cervix. N. A. Macleod.—p. 12.
Hematoma of Abdominal Wall. H. H. Gellert.—p. 12.

Diet and Calcium Content of Saliva.—Pattison asserts that a high calcium content of the saliva can be produced by a diet having a large fat-soluble vitamin content. A low calcium content can be produced by a diet containing much cereal (especially oatmeal) and comparatively little fat-soluble vitamin, although the amount of calcium ingested in this diet may be the same as, or even greater than, in the first mentioned diet. The calcium of the saliva is not increased by increasing the calcium of the diet over a short period. Tuberculous children appear to have a lower calcium content of the saliva than normal children, and, on the whole, low resistance to the infection is accompanied by low calcium content.

Pleural Effusion Complicating Pneumothorax.—Out of 309 consecutive cases in which Burrell successfully induced artificial pneumothorax for pulmonary tuberculosis, an effusion formed in 128 and of these, forty-seven patients are dead. Of the 181 cases in which no fluid formed, fifty-seven patients are dead. Of the 128 cases the fluid remained clear in ninety-two, and in twenty-seven death occurred. In the other thirty-six cases the fluid was tuberculous pus, and twenty patients are dead. Roughly speaking, cases that show clear pleural effusion do neither better nor worse than dry cases, but if a tuberculous empyema forms, the outlook is much more serious.

Chronic Obstructive Jaundice Caused by Adenocarcinoma of Hepatic Duct.—Weber reports a case of chronic obstructive jaundice (complete obstruction) due to primary adenocarcinoma of the hepatic duct at its junction with the cystic duct. The man, aged 62, died after having had jaundice for only about one month. He had had occasional hematemesis, but at the postmortem examination no lesion was found in the esophagus, stomach, or upper bowel to account for it. The adenocarcinomatous growth was small and macroscopically scarlike. No metastases were seen. On microscopic examination sections of the liver were found to contain numerous foci, recalling by their small size and their irregular distribution the focal necroses of infectious diseases (typhoid fever, etc.). They were distributed in various parts of the hepatic acini and contained necrotic liver cells and bile pigment; in many of them there were also quantities of large phagocytic cells (macrophages), and in some of them there were also collections of polymorphonuclear leukocytes, as if suppuration were threatening. There had been no fever during life. Another point of interest was the enlargement of the spleen. The spleen still weighed 770 Gm. It was evenly enlarged, of rather firm consistency, and on section a myeloid transformation was found.

Agglutination of Gonococcus.—An investigation was made by Jenkins of the serology of the gonococcus. It was evident that agglutinins to the gonococcus are not produced in man when the infection is limited to the genito-urinary system. In a generalized infection such as arthritis, the amount of agglutinin produced is so small and uncertain that the agglutination test as ordinarily performed is of no value for diagnostic purposes.

"Gann," Japanese Journal of Cancer Research, Tokyo

20: 21-35, 1926

*Antibody Formation in Experimental Carcinoma of Mouse. K. Yamagiwa, S. Tsukahara and S. Morimoto.—p. 21.
*Filtrable Cells of Rous Chicken Sarcoma. W. Nakahara.—p. 27.
Radiotherapy of Malignant Tumors. H. Yamakawa.—p. 33.

Antibody Formation in Experimental Carcinoma.—By means of intratumor injections of an aqueous extract of the spleen of a mouse previously inoculated with the emulsion of a mammary carcinoma, Yamagiwa et al. were able to inhibit the growth of a transplanted carcinoma. It is believed that a carcinoma antibody is responsible for this effect as the spleen extract of an animal not previously treated with mammary cancer emulsion had no inhibitory effect; nor did weak solutions of phenol or physiologic sodium chloride solution inhibit.

Filtrable Cells of Rous Sarcoma.—Nakahara has discovered that the Rous chicken sarcoma no. 1 contains a group of minute ameboid cells which readily pass through bacteria-tight Berkefeld filters (V and N). This fact, taken together with the remarkable resistance of the sarcoma cells to desiccation and to glycerination, renders it possible to explain many peculiar phenomena connected with the transmissibility of this class of tumors, without assuming the hypothetic causative agent, which for a long time dominated the thoughts of investigators. Chicken sarcomas can no longer be regarded as etiologically different from the true neoplasms.

Lancet, London

2: 1-52 (July 3) 1926

Cholecystography. S. Cade.—p. 1.
Health of Professional Women. L. Fairfield.—p. 5.
*Conduct and Fate of Ligature Made from Parietal Peritoneum of Ox. C. Ballance.—p. 10.
Action of Light on Eye. III. Retina. W. S. Duke-Elder.—p. 16.
Cholecystography. T. I. Bennett, A. M. Moncrieff and F. G. Nicholas.—p. 19.
*Measles Showing Unusual Nervous Symptoms. J. Todesco.—p. 21.
Case of Renal Calculus. A. C. S. Gupta.—p. 21.
Fracture of Anatomic Neck of Humerus Without Apparent Direct Violence. F. M. Blumer.—p. 22.

Fate of Ligatures Made from Parietal Peritoneum.—Ballance recommends the use of peritoneal ligatures instead of catgut or kangaroo tendons. His experiments show that the peritoneal ligature is particularly well adapted for this purpose, especially if chromicized, which delays the absorption of the ligature and is in no way surgically disadvantageous. When all the ligature has been absorbed and replaced by the living cells, the latter lose their pristine flexibility of form, become spindle shaped, and spin fibrous tissue. The outline of the original dead material of ligature can be recognized by the shape and size of the fleshy mass of new living tissue which has been substituted for it.

Measles Showing Unusual Nervous Symptoms.—The points of interest in Todesco's case are the nervous complications, with marked meningeal symptoms, fits and Kernig's signs, all very uncommon in measles. The character of the cerebrospinal fluid obtained was similar to that seen in acute meningitis but, unlike this disease, there was rapid improvement with loss of meningeal symptoms within forty-eight hours of their onset, the temperature never rising above 100 except on the day of admission, and coming down to normal after four days.

2: 53-106 (July 10) 1926

Nontuberculous Infections of Kidney. H. Cabot.—p. 53.
*Unilateral Phrenic Paralysis. C. Briscoe.—p. 56.
*Effects of Primary and Secondary Roentgen Rays on Skin of Frog Tadpole. H. Colwell and M. S. Thomson.—p. 59.
Syphilis of Heart and Aorta. F. W. Price.—p. 61.
*Acute Hemorrhagic Pneumonia of Infants. W. P. H. Sheldon.—p. 64.
Heart Disease and Epilepsy. R. O. Moon.—p. 65.
Loss of Orientation in Insured Workmen: Economic Aspect. P. Dunn.—p. 66.

Unilateral Phrenic Paralysis.—Considering all points together, it seems clear to Briscoe that cases of complete unilateral paralysis occurring in young patients with free thoracic movement will provide a typical appearance of inverse movement and elevation. In older patients, in whom the thorax is more fixed and the lungs less elastic, the appearances will be less marked. Cases of partial paralysis, on the other hand, cannot be expected to present a precise diagnostic picture, but will yield apparently indefinite results. This explains the varied reports received about many of Charlton Briscoe's patients, and leads to the final conclusion that a majority of the cases encountered in clinical work are instances of partial—not complete—paralysis.

Effects of Roentgen Rays on Skin.—Tadpoles were exposed by Colwell and Thomson to the general beam of mixed radiations from admixed colloidal elements. The effect of exposure to the primary roentgen rays from the tube (in the absence of any added colloid) is to produce a fairly marked temporary hypertrophy followed by degeneration. Yet, taking these factors into account, it would appear that the secondary radiations from copper are mainly destructive in character, as are also those of selenium, though here the destructive changes are less apparent and the evidences of temporary hyperplasia are more marked. In contrast to these changes are the effects produced by irradiation in the presence of colloidal silver, when the hypertrophic changes are predominant and exceed in amount those produced by irradiation in the presence of any other colloid used, while their persistence is also equally striking. Irradiation in the presence of colloidal gold (5 per cent mixture) also produced marked hypertrophic changes, more especially on the limbs and tails of the embryos. Next to those caused by irradiation in the presence of silver, these were the most marked hyperplastic changes observed. In the lead and bismuth series, hyperplasia was less marked and disappeared sooner than in the silver or gold series. The results suggest that the extraordinary hypertrophic changes due to irradiation in the presence of colloidal silver are due to some special action of some of its characteristic radiations; and as these changes are still very well marked in the case of gold, that probably some series of wave lengths are specially concerned in producing this hyperplasia.

Acute Hemorrhagic Pneumonia of Infants.—Sheldon's patient was a prematurely born baby. A blood stained nasal discharge twelve hours after birth was the first symptom. The temperature was subnormal, 96 F. Excessive persistent vomiting was the only other symptom. The baby died on the fourth day. There were no thrombi in the main vessels at the roots of the lungs. Sheldon is of the opinion that prematurity is an etiologic factor in these cases. In four of six cases on record the baby was born prematurely.

Policlinico, Rome

33: 281-332 (June 1) 1926. Medical Section

Glioma of Parietal Lobe. F. Giannuli.—p. 281.
The Thalamic Syndrome. F. Costantini.—p. 298.
Encephalography and Lipiodol. M. Gortan and G. Saiz.—p. 312.
"Amebic Liver Abscess." La Cava.—p. 329. Reply. Pontano.—p. 331.

Riforma Medica, Naples

42: 433-456 (May 10) 1926

Agglutination in Malta Fever. G. Izar.—p. 433.
Eunuchoidism from Acquired Syphilis. E. Mariotti.—p. 433.
Neurovegetative Syndromes of Influenzal Origin. A. Guerricchio.—p. 450.

Archivos de Endocrinología y Nutricion, Madrid

4: 57-103 (April) 1926

*Heart Disease in Diabetics. C. Blanco Soler.—p. 57.
Share of Nitrogen in Contraction of Muscle. V. Calvo Criado.—p. 68.
Case of False Addison's Disease. Pardo de Urdapilleta.—p. 77.
Pituitary and Diuresis. C. Blanco Soler and Pardo.—p. 83. C'cn.

Heart Disease in Pregnant Diabetic.—Blanco Soler gave small doses of insulin (20 to 40 units) daily to a diabetic woman with acidosis, a mitral murmur and cardiac insufficiency, at the seventh month of her third pregnancy. She was unable to sleep reclining, and the 3 or 4 liters of urine contained considerable glucose, besides quantities of acetone, diacetic and beta-oxybutyric acid. By the second day after beginning the insulin treatment, the general health improved remarkably and the heart recuperated, the pregnancy progressing to normal delivery. The improvement continued afterward, the woman now tolerating 80 Gm. of sugar, without insulin, and the general condition is completely satisfactory. He believes that heart disease is more common in diabetics than is generally recognized, and that it is often responsible for the fatalities after subsidence of the glycosuria and acidosis. In the case described here, the heart had not responded to the usual measures and stimulants but it promptly recuperated after it had been freed from the toxic action of the acidosis and was able to take nourishment from the blood. This seems to be impossible with hyperglycemic blood. The insulin had further a favorable action on the vagus.

Archivos Españoles de Pediatría, Madrid

10: 321-384 (June) 1926

*Prognosis of Tuberculosis in Infants. A. Romeo Lozano.—p. 321.
*False Green Diarrheas. P. Pereda y Elordi.—p. 335.
Dextroversion in Boy Aged 12. J. Soria.—p. 347.

Tuberculosis in Infants.—Romeo Lozano analyzes 114 cases of tuberculosis in infants, including sixty-four under 12 months. The death rate in this last group was 26.5 per cent, while it was only 12 per cent in infants up to 2 years; 5.2 per cent succumbed to nontuberculous affections. None of the infants had been removed from the infected environment; 23 per cent of the breast-fed died, and 38 per cent of the bottle babies. The defensive forces are not developed in the new-born, and consequently the prognosis is almost inevitably fatal in the younger infants. Hygiene and dietetic conditions have the greatest influence on the course of the tuberculosis.

True and False Green Diarrheas in Infants.—Pereda y Elordi ascribes the green diarrhea in certain cases to the swallowing of air. The compression from the air induces colic which may be relieved by expulsion of the air. As the air is expelled at intervals, it carries with it green stool, and thus is produced the clinical aspect of green diarrhea. If the infant's lips do not fit close to the nipple it is liable to swallow large amounts of air, as also in sucking its fingers, and in the sucking movements made by infants that are not getting enough nourishment. Although the mother's milk is the best food for the infant, her nipples may not be the best; two children may nurse the same breast but one will have green stools, the other not, although both may be gaining evenly in weight. When colics are relieved by expulsion of gases, and when the green stools react to nitric acid, aerophagia can usually be incriminated if the child is gaining in weight. True green diarrhea is alkaline, even with breast feeding, and there is fever. It is rare, does not react to nitric acid, and it yields to lactic acid. Infants that swallow much air, that have a wide pylorus, should be given a chance to expel the air in the stomach at intervals during the breast or other feeding. They should not be fed in a horizontal position, as this hinders eructation of swallowed air. He describes a number of cases of false green diarrhea and their correction by simple wise hygiene, quoting Cocetti's remark that infants have more to fear from ignorance than from disease.

Archivos Latino-Amer. de Pediatría, Buenos Aires

20: 199-262 (April) 1926

*Tuberculous Peritonitis. J. Schwarzenberg and Steeger.—p. 199.
*Differential Diagnosis Between Spinal Cord and Paravertebral Lesions. A. M. Marque.—p. 231.
Diphtheric Paralysis. J. Damianovich.—p. 242.

Tuberculous Peritonitis. — Schwarzenberg and Steeger describe eight cases of this disease in children between 3 and 8, under observation at the children's hospital at Santiago. Except in two of the cheesy type, great improvement followed a two or three months' course of treatment with various measures, including an arsenical, ultraviolet rays, and general hygiene. The prognosis is more favorable when the coexisting pleural or tracheobronchial processes are of a mild type than when there are signs of a cheesy pulmonary process. The tuberculin test is also useful. They emphasize that a laparotomy is applied usually only in the cases with ascites, and this type of case tends naturally to spontaneous recovery. Conservative treatment is therefore indicated; six of these children left the hospital in satisfactory condition.

Iodized Oil in Differential Diagnosis of Spinal Tumors.—Marque has applied lipiodol in six spinal cases in children and has found it instructive and free from by-effects at the time or later. Serial roentgenograms from a girl, aged 10, are reproduced. Three injections of the iodized oil had been given and they allowed clearing out of a costovertebral abscess compressing the spinal cord, with almost complete recuperation of function.

Archivos de Med. Cirugía y Esp., Madrid

24: 577-624 (June 26) 1926

*Uremia and Acid-Base Balance. Mogena and Orcoyen.—p. 577.
Fröhlich's Adiposogenital Infantilism. M. Prados y Such.—p. 590.

The Acid-Base Balance in Case of Retention of Urea.—Mogena and Orcoyen found that the urea content of the blood and the alkali reserve were closely connected in forty-three patients with diseased kidneys. The lowest figure for the alkali reserve was 13.9 per cent in two patients who succumbed to their nephritis in a few hours. The urea content of the blood was 0.064 and 0.160 per cent. In every case of uremia the acid-base balance was deranged, the alkali reserve declining. The prognosis of nephritis with retention of urea does not depend so much on the amount of urea in the blood as on the degree of acidosis. Too great depletion of the alkali reserve is inevitably fatal. They advise a diet rich in fruits and vegetables as an aid in restoring the acid-base balance in nephritis.

Boletin Soc. de Obstet. y Ginecol., Buenos Aires

5: 63-133 (May 30) 1926

Case of Krukenberg Tumor. J. C. Ahumada.—p. 71.
*Forceps at the Superior Strait. R. Schwarcz.—p. 83.

Forceps at the Superior Strait.—This profusely illustrated article and the discussion deal with the application of the Kjelland forceps, especially to the superior strait. Schwarcz emphasizes that with a relatively contracted pelvis, all forceps are contraindicated; symphysiotomy should be preferred for primiparas. Palacios Costa said he had had two or three failures in the ten or fifteen cases in which he had used the Kjelland. Beruti stated that in certain cases in which the Naegele forceps had failed, the Kjelland proved ineffectual also, and in several cases in which the latter had failed, he succeeded with the Naegele.

Brazil-Medico, Rio de Janeiro

1: 263-274 (May 15) 1926

*Clinical Meteorology. Annes Dias.—p. 263.

Pathogenic Influence of Meteorologic Disturbances.—Annes Dias comments on the surprising disregard shown by modern textbooks as to the pathogenic influence on the sick of cosmic electricity, terrestrial magnetism, radiobiology and the weather in general. Rheumatism, asthma and heart and mental diseases are affected by weather conditions. His attention was attracted to the subject by the exceptional number of deaths from heart disease and typhoid recorded at Rio during the turbulent equinoctial storms of last fall and spring. Some of these patients had been apparently doing well until this period of low barometric pressure and electric phenomena. We appreciate the force of these cosmic influences when they act suddenly, in the form of the lightning stroke, but a long continued milder action may be almost equally destructive in time.

1: 275-284 (May 22) 1926

*Treatment of Leprosy. Antenor Machado.—p. 275.
Topical Use of Bismuth in Bergeron's Stomatitis. B. Pedral Sampaio.—p. 277.

Oil of Brazilian Tree in Treatment of Leprosy.—Machado has been making a special study of the oil from the tree *Carpotrochea brasiliensis* which resembles chaulmoogra oil in certain respects. It has been used quite extensively lately in the treatment of leprosy, with eminently satisfactory results, he says. The reaction is not so severe as with chaulmoogra oil, perhaps because the acids in the ester are not so rich in methyl radicals. The tree is known locally as the sapucainha, canudo de pito or papo de anjo, and an extract from it is a household remedy for skin diseases.

Gaceta Médica de México, Mexico City

57: 131-278 (April) 1926

*Blunders in Diagnosis. Ulises Valdes.—p. 131.
*Uncontrollable Laughter. E. O. Aragón.—p. 142.
Chronic Obstruction of Common Bile Duct. M. Godoy Alvarez.—p. 147.
*Treatment of Glaucoma. A F. Alonso.—p. 158.
Insulin in Treatment of Diabetes. M. Quiñones.—p. 181.

Blunders in Diagnosis.—Valdes confesses that the operation showed that the diagnosis had been incorrect in 6.2 per cent of 127 operative cases during 1925. In some of them the examination had been incomplete, and in the others the symptoms had been erroneously interpreted. In one case the possibility of a pregnancy seemed out of the question, and a fibroma was diagnosed. In another, torsion of the pedicle of a fibroma and its cylindric shape had suggested salpingitis. A cancer in the gallbladder had masqueraded as gallstone disease, in another case. Only in one instance would the operation have been different if the true condition had been recognized; this was in a case of fungoid endometritis. The uterus was amputated on the assumption of fibromas.

Uncontrollable Laughter.—The young woman had been laughing incessantly for seventeen hours. A subcutaneous injection of a sedative then did not arrest the laughing, which was pure laughter, without complications. Aragón then applied pressure to the ovaries which were tender, the young woman being in the second day of a menstrual period. Under the compression of the ovaries the laughing gradually became attenuated and subsided, the patient dropping to sleep, aided by the sedative.

Treatment of Glaucoma.—Alonso expatiates on the advantages of the Lagrange fistula method in treatment of glaucoma, as he realized them in operating on six patients by this technic. The article is illustrated.

Medicina Contemporanea, Lisbon

28: 177-184 (June 6) 1926

*Syphilis of the Bladder. Pinto Monteiro.—p. 177.
Campaign Against Tuberculosis in Portugal. Cassiano Neves.—p. 182.

Syphilis of the Bladder.—Pinto Monteiro comments on the vagueness of the differential diagnosis in these cases. Pollakiuria is the leading symptom: it is not dependent on menstruation, and does not usually display the tendency to evening exacerbations which otherwise is observed in syphilis. It may be absent, and there may be a roseola in the bladder. When there is no cystitis, the bladder syphilis generally belongs to the tertiary phase or is a manifestation of congenital syphilis. The differential diagnosis has to be based on the exclusion of other causes, and the benefit under antisyphilitic treatment. In two cases described, the syphilis had been acquired in one woman, and the chancre seemed to be in the bladder. The other patient was a virgin with congenital syphilis. The Wassermann test was negative. Both patients were in the twenties, and both recovered promptly under specific treatment.

Prensa Médica Argentina, Buenos Aires

13: 1-56 (June 10) 1926

*Sanocrysin Exanthem. Bonorino Udaondo and Vadone.—p. 1.
Lymphogranulomatosis of the Spleen. Strada and Navarro.—p. 5.
*Christeller's Frozen Section Preparations. S. Mazza.—p. 9.
Bismuth in Aortitis. G. Perrin.—p. 13.
Advantages of Roentgenotherapy for Tuberculous Glandular Disease. M. Miranda Gallino.—p. 21.
Endonasal Plastic Surgery. J. Basavilbaso.—p. 23.
Acute Leukemic Hypertrophy of Lymph Glands with Intense Erythremic Anemia and Hemohistoblastosis. Bianchi and Beretervide.—p. 26.
*The Urine in Syphilis. J. L. Carrera.—p. 44.

Sanocrysin Eruption.—In the case illustrated, a man with pulmonary tuberculosis and no previous skin affection was being treated with sanocrysin when he developed intense gingivitis and stomatitis, with an extensive eruption, predominating on the hands and arms. Similar manifestations have been noted under treatment with other gold salts, and others have reported eruptions in a certain proportion of their sanocrysin-treated cases.

Christeller's Histotopographic Sections.—Mazza expatiates on the advantages and reproduces some of the photographs of preparations obtained by the E. Christeller rapid method which allows the cutting of frozen sections up to 9 by 12 cm. in size.

The Urine in the Syphilitic.—Carrera relates that serial examination of the urine in thirty syphilitics who had never taken treatment before, showed the urea and glucose content normal, but there was albuminuria in 5 per cent and traces of bile pigments and acids in 10 per cent. In twenty-five that had recently been given thorough neo-arsphenamine treatment, the urea and glucose were normal, but there were traces of albumin in 6 per cent and considerable in 2 per cent, and tube casts were present in 20 per cent. In another group of forty-five syphilitics that had been treated with mercury, the urea was subnormal, traces of albumin were manifest in 35 per cent, with considerable albumin in 10 per cent, traces of glucose in 4 per cent, pigments and biliary acids in 22 per cent, and tube casts in 60 per cent.

Archiv für Dermatologie und Syphilis, Berlin

150: 195-374 (May 22) 1926. Partial Index

Psoriasis Vulgaris. B. Lipschütz.—p. 195.
Statistics of Visceral Syphilis. A. Netschaew and B. Eward.—p. 213.
Excretion of Urea Through the Sweat Glands. N. Melczer.—p. 235.
Tertiary Skin and Bone Changes in Neurosyphilis. Prokoptschuk.—p. 261.
Skin Diseases and Physique. O. Gans and H. W. Gruhle.—p. 271.
*Purulent Orchitis of Gonorrheal Origin. H. Salutzky.—p. 300.
Secondary Deforming Syphilitic Arthritis. C. Kreibich.—p. 316.
*Localization of Hematogenous Skin Infections. F. Kogoj.—p. 333.

Purulent Orchitis of Gonorrheal Origin.—Salutzky reports two cases of gonorrhea of the testicle. From the first the organism was cultured; in the second, conditions were unfavorable and the cultures were not typical, but microscopic examination of the pus was convincing. The testicle is rarely invaded by the gonococcus, having a strong protection in the tunica albuginea. Spermin is also believed to have the property of reducing the toxicity of microbic poisons. In his two cases, injury to the testicle had preceded the infection. Eighteen other cases are reported in the literature, but in only two of these was the gonococcus actually demonstrated.

Determining the Localization of Hematogenous Skin Infections.—Kogoj found that injection of internal organs of guinea-pigs and rabbits with a culture of the fungus of mouse favus was followed in most cases by hematogenous foci in *unirritated* as well as in irritated portions of the skin, but that the foci appeared with greater frequency in the irritated portions. Up to a certain point, it was possible for the experimenter by applying strong irritation to elect the site of the skin lesion.

Archiv für Schiffs- und Tropenhygiene, etc., Hamburg

30: *275-308 (July 1) 1926*

*Beriberi. Miguel Couto.—p. 275.
*Methylene Blue in Malaria. Miguel Couto.—p. 281.
*Blackwater Fever. G. J. Perekropoff.—p. 284.
Pathogenesis of Hemoglobinuria in Malaria. Kritschewsky.—p. 293.
Concentrated Sunlight as Adjuvant in Treatment of Chancroid on Shipboard. E. G. Adelmann.—p. 297.

Beriberi.—Couto protests against some recent statements that link beriberi with European polyneuritis. He describes the special features which distinguish it, and emphasizes the preponderant rôle of the vegetative nervous system in the manifestations. In Brazil, beriberi has many features of an infectious disease, especially its epidemic spread, its occasional fulminating form, tendency to dropsy, the girdle sensation, the digestive disturbances at the onset, the circulatory and bladder disturbances, tachycardia, duplication of the second heart sound, gallop murmur and acute insufficiency of the heart, and sometimes the isolated occurrence of visceral symptoms. The rice used in Brazil is identical and is prepared the same all over the country, but beriberi is endemic in the north and is almost unknown in the southern portion. Certain districts and certain buildings are particularly subject to it, and the patients recover as if by magic on change of climate, while the beriberi is liable to return on return to the focus, even if they refrain from eating rice. The majority of the physicians of Brazil believe, therefore, that although a syndrome may occur from rice which resembles beriberi, yet true beriberi, from its course, its distribution and its paroxysms can be only an infectious disease.

Methylene Blue in Treatment of Malaria.—Couto reiterates that methylene blue is a substitute for quinine, and in mild cases can be used instead of the latter. It is especially useful in the cases refractory to quinine. In the tropical or pernicious type of malaria, he advises giving both together from the beginning, by intravenous injection. For this, the dose is 0.05 Gm. of methylene blue in 5 Gm. of water. From two to five doses can be given during the day. He has never witnessed any mishaps from this intravenous injection. In mild cases he gives the drug by the mouth, in capsules containing 0.10-0.20 Gm. to a total of 1.5 Gm. It is taken during the meals to avoid irritating the gastric mucosa. The subcutaneous route is almost certain to cause an abscess.

Blackwater Fever.—Perekropoff describes a case which seems to demonstrate that the malaria parasite itself was directly responsible for the hemolysis. He confirmed this in the test tube in six other cases among sixty-two of tertian malaria. Cultures of malaria parasites developed hemolysins in six to twelve hours; the influence of the liver and spleen was thus excluded, and also the influence of quinine. He treated two patients presenting severe blackwater fever with large doses of quinine, with promptly favorable results.

Archiv für Verdauungs-Krankheiten, Berlin

38: *143-310 (June) 1926*

*The Factors in Stomach Disease. W. Kerppola.—p. 143.
Plastic Linitis in Congenital Syphilis. J. Strauss.—p. 186.
The Stomach in the Interdigestive Phase. J. Vándorfy.—p. 198.
*Treatment of Gastric and Duodenal Ulcer. J. Schrijver.—p. 203.
*Regurgitation Into the Stomach. W. Iwanow.—p. 223.
*Gastroscopy with Ulcer. R. Korbsch.—p. 247.
Endoscopy of the Intestines. L. v. Aldor.—p. 271.
*The Anacidity Questicn. L. Jarno.—p. 290.

Vasomotor and Nervous Factors in Stomach Disease.—Kerppola tabulates the details of seventy cases of achylia and varying conditions of stomach secretion (heterochylia) in which he studied the action of epinephrine and of pilocarpine on the secretory function of the stomach. His research included also eleven cases of subacidity, ten of ulcer with bleeding, eleven of hyperacidity and thirteen of nervous dyspepsia, besides the healthy controls. In one family, two male cousins had died from gastric cancer after years of achylia; two of the children in their families had chronic achylia, as also one granddaughter. He found the healthy stomach empty after twelve hours of fasting. If then 1 mg. of epinephrine was injected intramuscularly, no secretion of gastric juice followed, but if 0.01 Gm. of pilocarpine was injected instead, there was secretion of hydrochloric acid and of mucus, the acidity normal or below. The various tests described demonstrated that spastic conditions and paralysis in the blood vessels of the stomach are responsible for a large proportion of gastric disturbances. If the pathologic condition is mild, nervous dyspepsia is the clinical picture presented. With stronger contraction, subacidity and achylia result. If the paralytic phenomena predominate, hyperacidity and hypersecretion follow. Pronounced spastic and paralytic conditions occurring together, explain ulcer formation. He determined further that instability of the central nervous system and various endocrine disturbances, hyperthyroidism, hypogenitalism and tetany, were responsible for the vasomotor irritability in all the groups studied. Next to these came allergic influences. He obtained positive reactions in many cases to skin tests with dandruff, meat and shellfish extracts, aspergillus or mite-containing oatmeal. The pilocarpine tests revealed weakness of the vagus in many, but occasionally a vigorous reaction was observed. As he had noted that protein therapy tended to reduce vasomotor excitability, he gave this a trial. Distinct subjective improvement followed parenteral injections, and secretory conditions improved in heterochylia, subacidity and hyperacidity. It evidently modified the response to epinephrine; in one ulcer case, in which neither aspiration nor epinephrine had induced any secretion of hydrochloric acid, a profuse secretion followed the protein injection. This testified that our usual tests may give negative responses merely from the fact that the spasm is too strong to yield to ordinary measures.

The Sippy Cure in Gastric and Duodenal Ulcer.—A similar article by Schrijver was summarized in The Journal, Dec. 5, 1925, p. 1848. He says that, in his experience, an operation on the stomach for ulcer cured 95 per cent of those thus treated. This relieved them at the same time of the menace of perforation and hemorrhage. He does not believe that the Sippy cure will do away with the necessity for operations for ulcer.

Regurgitation into Fasting Stomach.—Iwanow's research has confirmed that periodic regurgitation of duodenal contents into the fasting stomach is a physiologic phenomenon. It alternates regularly with resting periods in health, but in disease conditions it may be altered or suppressed. On account of this regurgitation, an alkaline reaction with bile and trypsin in the aspirated fluid is no evidence that the tip of the tube is in the duodenum. Bile has a certain antagonistic action in regard to pepsin, but there is no antagonism between pepsin and trypsin.

Gastroscopy and Ulcer.—Korbsch presents testimony to confirm that chronic gastritis is an important factor, if not the indispensable factor, in the development of a niche-forming ulcer. The evolution and retrogression under treatment can be watched with the gastroscope. Mechanical factors are almost equally important, the ulcer locating at predisposing points in the sagging stomach and duodenum. By systematic lavage and roentgen irradiation he has succeeded in curing the gastritis and its ulcer complication. Although the symptoms promptly subside under the roentgen rays, the gastroscope shows the long persistence of the tissue changes before healing is complete. The rinsing treatment must be kept up for months to insure a permanent cure.

The Anacidity Question.—Jarno asserts that anacidity is generally accompanied by a high cholesterol content in the blood. He regards this hypercholesteremia as an important factor in anacidity.

Dermatologische Wochenschrift, Leipzig

32: *801-840 (June 12) 1926*

Chemistry of Bacillus Leprae. A. Paldrock.—p. 801.
*Skin Lesions and Cutaneous Gland Secretions. H. Fischer.—p. 805.
Blastomycosis of the Skin. Grschebin and Maschkilleisson.—p. 811. C'cn.
Intramuscular Injections of Sulphonated Bitumen. A. Straszyński.—p. 818.

Importance of Abnormal Secretion of Cutaneous Glands for Pathologic Changes in the Skin.—Fischer found that certain changes in many diseases affecting chiefly the epidermis were paralleled in the local irritation set up by excretion through the cutaneous glands of parenterally administered chemicals.

He concludes that these diseases are caused by pathologically changed secretions of the cutaneous glands, and suggests the same etiology for many skin carcinomas, on the basis of a chronic endogenous chemical irritation.

Deutsche medizinische Wochenschrift, Berlin

52: 1027-1068 (June 18) 1926

*Campaign Against Alcoholism. P. Schmidt.—p. 1027.
Alcoholism and Penal Code. Ebermayer.—p. 1029.
The Practitioner and Biologic Family Research. W. Scheidt.—p. 1031.
*Virulence and Chemotherapeutic Action. H. Kroó.—p. 1032.
Antagonism and Synergism. E. Starkenstein.—p. 1034.
*Leukocyte Counts. V. Schilling.—p. 1034. C'cn.
Organic or Inorganic Iron. Baumgarten.—p. 1037.
Reply. Seyderhelm.—p. 1037.
*Treatment of Pernicious Anemia. E. Hartmann.—p. 1038.
Research in Tuberculosis. Deycke.—p. 1041.
*Treatment with Metal Salts. L. E. Walbum—p. 1043.
*Nonspecific Sensitization of Skin. C. Kreibich.—p. 1044.
Conglutination of External Os. Rissmann.—p. 1045.
Pyelonephritis with Elimination of Necrotic Part of Kidney. E. Hofmann.—p. 1045.
Gonorrheal Balanoposthitis with Complications. Werner.—p. 1046.
A Quartz Lamp. M. E. Mayer.—p. 1048.
Venereal Diseases in Children. H. Davidsohn.—p. 1048. C'tn.
History of Syphilis. H. E. Sigerist.—p. 1050.
*Anatomic Modeling. J. Brodersen.—p. 1052.
*Plato's Criticism of Physicians. Cassel.—p. 1053.
Medical Yoga Methods. I. Isakowitz.—p. 1054.

Campaign Against Alcoholism.—Schmidt admits that up to 25 Gm. of alcohol in diluted beverages is harmless. People who are not accustomed, may show slight symptoms of intoxication from 50 Gm., while 100 Gm., taken within two hours, always induces grave intoxication in people who are not accustomed to it. He declares that good light wines and beer are the best weapons against alcoholism. He pleads for low taxation of beer with a maximum content of 3 per cent alcohol and of wine with 7 per cent. All the beverages with a higher alcohol content should be taxed higher in a rapid progression, according to the alcohol content. Liquors should be taxed extremely high. He also suggests some legislative matters such as punishing intoxication, interning asocial drunkards, and the declaration that nobody can be sued for a debt incurred by drinking alcoholic beverages. The general propaganda as well as improvement of social conditions would do the rest.

Virulence and Chemotherapeutic Action.—Kroó injected the minimum therapeutic doses of arsphenamine into mice infected with recurrens spirochetes of different degrees of virulence. He found that the more virulent the strain, the more accessible it is to the action of arsphenamine.

Leukocyte Counts.—Schilling demonstrates that differential counts have many advantages over the absolute counts of the single types of leukocytes. In spite of the sources of error involved, they are more constant, more striking and much easier to make. Beside this, it is always possible to estimate the absolute count from a slide.

Treatment of Pernicious Anemia.—Hartmann uses small doses of arsphenamine in treatment of pernicious anemia. He injects 0.075 to 0.15 Gm. intravenously at five to six day intervals, and reports quite satisfactory results.

Treatment with Metal Salts.—Walbum succeeded in preventing the infection of mice by a bacillus of the paratyphoid group by administering salts of caesium and iridium. He made similar experiments on tuberculous guinea-pigs with fifty metals. Thirty-nine of these metals, including gold, copper, manganese and beryllium, had no influence. Three metals did not prevent the development of tuberculosis, yet the animals finally recovered. Eight metals, among them barium, aluminum and selenium, prevented the development of tuberculosis.

Nonspecific Sensitization of Skin.—Kreibich succeeded in sensitizing adults to tuberculin by intracutaneous injections of water.

Anatomic Modeling.—Brodersen extols the advantages of a modeling course in the teaching of anatomy.

Plato's Criticism of Physicians.—Cassel quotes the introduction of Plato's "Charmides": Socrates emphasizes there the necessity of beginning to treat the soul before attempting to treat the body.

Klinische Wochenschrift, Berlin

5: 1113-1160 (June 18) 1926

*Weil's Disease. Uhlenhuth and Grossmann.—p. 1113.
*Therapeutic Serums. A. Schlossmann.—p. 1117.
*Differentiation of Achylias. G. Katsch and H. Kalk.—p. 1119.
*The p_H and Pain. W. v. Gaza and B. Brandi.—p. 1123.
*Buffer Action in Muscle and Circulation. H. Eppinger et al.—p. 1128.
Skeleton of Pes Equinovarus. H. Virchow.—p. 1130.
Factitious Urticaria. E. Rajka.—p. 1132.
Blood Sugar Determination. M. Adler.—p. 1136.
Bronchial Lymph Nodes. S. Engel.—p. 1136.
*Metabolism After Venesection. G. Endres.—p. 1137.
Pluriglandular Symptoms in Tetany. H. Schönemann.—p. 1137.
Diet in Intestinal Diseases. R. Ehrmann.—p. 1139.
*Fragility of Erythrocytes. F. Rietti.—p. 1142.
Improved Capillaroscope. N. A. Skulsky.—p. 1158.

Weil's Disease.—Uhlenhuth and Grossmann review the history of the discovery of the agent of Weil's disease, as well as the further epidemiologic research. It seems that saprophytic spirochetes living in the water may change by repeated cultures, in mediums containing serum, so that they become immunologically identical with the spirochetes of Weil's disease. Zülzer succeeded in producing the typical disease in guinea-pigs with such a strain which had been originally innocuous. It is possible that this change of a saprophyte into a pathogenic germ might occur normally in rats. They admit that some of the epidemiologic problems are not solved by these facts.

Therapeutic Serums.—Schlossmann pleads for compulsory correct labeling of various serums used in treatment. For instance, an assistant of his, who published a critical note, was sued by a company putting out a serum from calves inoculated with cowpox, under the name of whooping cough serum, without any sufficient experimental and clinical basis. He criticizes most severely the way in which Degkwitz has brought out a serum from sheep inoculated with an alleged measles material as a preventive serum against measles. Degkwitz' paper contains quite a few interesting side-lights but certainly no basis for this treatment. The results of attempted immunization with this serum at Schlossmann's clinic were so sad that the company manufacturing Degkwitz' serum has decided to withdraw it from sale. He also requires that various scarlet fever antiserums which have been put out recently by German manufacturers should be better tested before they are offered for sale.

Differentiation of Achylias.—Katsch and Kalk state the following degrees of secretory function of the stomach: the first is production of acid after ingestion of a simple test meal. The second degree is production of acid only after subcutaneous injection of 0.5 mg. histamine; a weaker stomach is unable to secrete any acid but secretes some of the neutral red injected intramuscularly (5 cc. of a 1 per cent solution). The next degree reacts only with an increased secretion, but no acid, to the injection of histamine. There is no reaction at all in the gravest cases. The injection of histamine is especially valuable in differentiation between neurogenic and organic achylia.

The p_H and Pain.—Gaza and Brandi injected isotonic phosphate buffer solutions of various hydrogen-ion concentrations (p_H 5.9-8.0) into skin and muscles. The injection was painless in alkaline and neutral mixtures. All the acid mixtures (p_H below 7.2) caused marked transitory pain, which was almost unbearable with a p_H of 5.9. The tissue fluid acts as a buffer, and therefore a slow injection is practically painless. Intramuscular injection of acid solutions caused unpleasant sensations resembling those in overexertion. They review the significance of hydrogen-ion concentration for the pain in inflammation and in ischemia of tissues.

Buffer Action in Muscle and Circulation.—Eppinger, Kisch and Schwarz found after moderate exercise a much greater reduction of the alkali reserve in the blood of patients with cardiovascular diseases than in normal subjects. They attribute this to an insufficient buffering in the muscles, which may be due either to an overproduction of acid or to diminished buffering power of the muscles, due to defective circulation.

Metabolism After Venesection.—Endres found as a rule a diminished specific dynamic action of proteins in subjects

He reports five cases, in three of which there was recovery; in one of these however, although the circulation was restored, gangrene set in, necessitating amputation. In another surviving patient, a woman, aged 64, with heart disease, there was an embolus in both femoral arteries in the groin. They were removed by arteriotomy directly over the emboli.

Mobilization of Ankylosed Knee.—Arthroplasty of a knee ankylosed from childhood from tuberculosis restored function to the extent of 75 degrees of flexion in a woman, aged 21. This amount of flexion has been maintained for three years. In raising the other leg, the knee of which is ankylosed, she is able to support the weight of the body on the mobilized knee.

Acta Psychiatrica et Neurologica, Copenhagen

1: 1-104, 1926

Jean Martin Charcot. A. Friedenreich.—p. 3.
Lipiodol Test in Spinal Cord Tumors. Brouwer and Oljenick.—p. 15.
*Paralysis of Foot, of Cerebral Origin. V. Christiansen.—p. 39.
Pontoneocerebellar Hypoplasia. S. Koster.- p 47.
Catatonia and Melanoderma. V. Wigert.—p. 84.

The "Acta Psychiatrica et Neurologica."—This new journal has been founded by a group of psychiatrists and neurologists in Denmark, Finland, the Netherlands, Norway and Sweden. The editor in charge is Dr. K. H. Krabbe, Østerbrogade 21, Copenhagen.

Complete Spastic Paralysis of the Left Foot, of Cerebral Origin.—Christiansen's patient presented a syndrome which is characteristic of a cortical lesion of the contralateral motor centers, but is often misinterpreted: complete spastic paralysis of one foot, accompanied by cerebral hemiplegia of the same side. Sometimes, as appeared in this case only when the patient was unusually fatigued, there is spastic paralysis of the foot of the other side, and Babinski's sign. The paralysis, of the left foot in this case, had developed slowly and progressively, closely associated with jacksonian attacks, over a period of seven years. There was headache, but total absence of corpus striatum symptoms. At operation there was found an extracerebral tumor which had greatly compressed the right hemisphere and had dislocated the falx so that the left hemisphere also was pressed upon. The tumor and the portion of the falx to which it was attached were removed. The patient has now a spastic paresis of the left leg, which will probably improve with time. The long duration of the tumor had evidently brought about a secondary degeneration of the pyramidal tracts of the right hemisphere.

Finska Läkaresällskapets Handlingar, Helsingfors

68: 397-508 (May) 1926

History of Trachoma in Finland. Grönholm and Hjelmman.—p. 397.
*Course of Articular Rheumatism. O. Holsti.—p. 414.
*Poisoning from Copper Utensils. H. Sternberg.—p. 459.
Thyrotoxicosis and Metabolic Disorders. J. Wahlberg.—p. 468.
Influence of Age and Season on Child Health. Lovegren.—p. 474.

Course of Acute and Chronic Articular Rheumatism After Treatment of Inflammatory Processes in the Upper Air Passages.—Holsti has been making a four years' follow-up study of thirty-five cases of acute and recurring articular rheumatism and of seven chronic cases. Not only tonsillitis, but all other inflammatory processes in the upper air passages had been given thorough treatment. A favorable influence was unmistakable, *especially in the acute febrile form,* with involvement of the heart. In the pure form, favored by puberty, there have been no recurrences to date. He noted that the persons who develop rheumatic infection are often poorly nourished and complain of gastro-intestinal disturbances, ready fatigue and migraine. Some of the patients after the attacks seem to require vigorous tonic treatment, eventually protein therapy. No benefit seemed to be realized in the chronic cases at first, but in three there was a decided improvement in the course of the year.

Copper Salts as Factor in Gastro-Intestinal Disease.—Sternberg warns of the danger of chronic poisoning from cooking vessels when the tin coating over copper wears off, or copper vessels are used. A polished knife blade, dipped in vinegar and then placed for an hour in the food suspected, develops a rusty deposit in the presence of copper salts. The color changes to blue when moistened with ammonia. Acute copper salt poisoning can be treated with lavage and white of egg; the chronic form with finely pulverized iron, or iron compounds, which attract the copper out of its combinations.

Hygiea, Stockholm

88: 353-384 (May 15) 1926

*Melanosarcoma in the Liver. P. G. Månsson.—p. 359.
Suggestions for Railroad Transportation of the Sick. J. A. Hedlund. —p. 365.

Melanosarcoma of the Liver.—The clinical picture was a combination of Banti's disease and Addison's disease in a boy, aged 4. Necropsy revealed that the liver was totally transformed into a melanosarcoma. No primary tumor could be found elsewhere.

88: 385-432 (May 31) 1926

*Acute Dilatation of the Stomach. M. Arborelius.—p. 385.
The Anatomic Basis for Monocular and Binocular Vision. R. Bárány. —p. 403.

88: 433-464 (June 15) 1926

Diabetic Versus Benign Glycosuria. Y. Akerrén.—p. 433.

Acute Dilatation of the Stomach, Especially with Infectious Diseases.—Arborelius describes three cases in which the acute dilatation of the stomach developed in the third or fourth week of pneumonia or other infectious disease, as the temperature returned to normal and the patients began to take more nourishment. Under repeated evacuation of the stomach, clinically normal conditions were restored, and the motor function has been normal since. Fluid was supplied by subcutaneous drip infusion. Although the debilitated patients needed nourishment, none seemed to be absorbed from the stomach, and he thinks it is wiser to leave the stomach entirely in repose for the first few days. No postural treatment could be attempted on account of the weakness and general condition. No effect was observed from massage and tapping on the stomach as in attempts to overcome inertia of the uterus, but this might answer in less debilitated patients. The main thing, however, is to think of the possibility of acute dilatation, and confirm it with the stomach tube, instead of assuming poisoning, coma, volvulus, acute peritonitis or pancreatitis, or ileus—instances of such blunders, some with grave consequences, are cited. Factors depressing the functions of the bowel, fever and emotional stress may aid in bringing on the acute dilatation, especially when there is a neurotic predisposition.

Ugeskrift for Læger, Copenhagen

88: 597-612 (June 24) 1926

*Origin of Pernicious Anemia. K. Faber.—p. 597.
Isolated Trauma of the Pancreas. H. Thomsen.—p. 602.

Intestinal Origin of Pernicious Anemia.—Faber's views *were reviewed editorially on page 249.*

88: 613-632 (July 1) 1926

*Function of the Tonsils. V. Schmidt.—p. 613.
*Protein Therapy with Chronic Polyarthritis. E. Faber.—p. 619.
Suicides in Copenhagen, 1905-1925. P. Heiberg.—p. 626.

Antibody Production in the Tonsils.—Schmidt massaged the tonsils in eighteen healthy persons and noted thereafter that the leukocyte count declined. The lymphocytes were the elements which disappeared in the peripheral blood, and he thinks there can be no question that this is a reaction to the forcing out into the blood stream of an antibody formed in the tonsils. Massage of actively diseased tonsils elicited a reaction in the form of a polymorphonuclear leukocytosis.

Protein Therapy in Chronic Polyarthritis.—No results were visible in eleven cases, but in sixteen there was more or less marked improvement and in two a complete cure followed the treatment, out of the twenty-nine given parenteral injections of various proteins by Faber. He deplores the lack of perseverance in keeping up treatment, and the peculiar readiness of these patients to resort to new measures recommended by the laity. They seem unable to realize that polyarthritis, like tuberculosis, requires long and systematic treatment. The fact that a fever so often disappears under the protein therapy indicates that it really acts on the cause.

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USE OF COLLOIDAL LEAD IN THE TREATMENT OF CANCER *

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NEW YORK

While the use of colloidal metals in the treatment of malignant diseases was first recommended by Torres in 1904 and carried out in a desultory way for a number of years, active interest in the subject was stimulated in 1911 by investigations of Wassermann and Keysser.[1] They pointed out that, in order to be effective, such agents must attack the tumor cells primarily; must reach the growth through the blood stream, and if possible attack the nucleus in order to exert the full lethal effect on the cell, as this is the most sensitive portion. It was already known that salts of tellurium and selenium were highly toxic, but tumors in animals were not found to be influenced by intravenous injections of selenium, though remarkable effects were obtained by the direct injection into the tumor itself. Wassermann therefore concluded that it was necessary to combine the selenium with some substance which would carry the destructive agent into the cell itself so that it might unfold its lethal action locally without destroying the body tissues. He reported that many of the animal tumors disappeared after the injection of a selenium-eosin compound, the eosin being supposed to act as a vector for the toxic selenium; but when the method was tried on human beings, it was found that the lethal dose for the tumor and the patient often coincided. The method, therefore, was abandoned.

As colloidal metals had been observed to act as ferments, especially as oxidases, decomposing hydrogen peroxide freely, it was believed that they might also stimulate the normal autolytic ferments of the tumor cells which Neuberg[2] and others thought were unusually active in neoplastic cells. Neuberg therefore tested a number of colloidal metals with this theory in view. Influenced by Wassermann's ideas, he endeavored to render the colloids less toxic to the general organism, while retaining their destructive capacity to the tumor cells, by combining them in various ways, details of which are not given. Subcutaneous injections of such compounds showed no effect; but after intravenous injections of various colloidal metals, including lead and copper, changes were noticed in the mouse tumors which they treated, especially with cobalt and silver. In a few minutes after the intravenous injection, the tumor showed extraordinary congestion; the vessels leading to it were often remarkably dilated, and in the tumor could be found precipitates of the metals introduced. The growth softened in a short time, hemorrhages occurred in its substance, its contents became fluid, and in a considerable number of instances complete resorption was observed both in primary and in transplanted growths. Similar therapeutic benefit was noted in the tumors of rats and dogs, but it was promptly discovered that the therapeutic dose lay so near to the lethal dose that the method could not be employed in human beings. Caspari also pointed out that small doses were of no value and might even stimulate the growth of the tumor. But he was able to report that one case of carcinoma of the tongue had been slightly improved by intravenous injections of an aniline-silver compound. A good many experimenters treated human beings with colloidal selenium, which seemed less poisonous than the selenium salts, but the results obtained were merely palliative and the use of this material has been abandoned. The same is true of colloidal sulphur, although Izar[3] and Basile[4] reported that they were able to cure rat sarcomas. The tumors became congested and hemorrhagic, and the vessels thrombosed. But spontaneous disappearance is so frequent in these growths that it is difficult to evaluate the results.

Colloidal silver was also tried by Kausch.[5] He noticed quite striking improvement in some human tumors, but also found that severe reactions might occur—chills, high temperature, cyanosis, with death of one patient, so that he cautions against the use of the method, and it has apparently been abandoned. Rohdenburg,[6] using a commercial silver preparation, obtained no therapeutic results in animals and in ten human beings.

Various copper preparations have been tried by Loeb[7] and Gaube,[8] especially cuprase, which is a colloidal copper hydrate. Loeb obtained no permanent results. Gaube noticed that considerable improvement in human beings took place, but his observations were over too short a period to permit of any final conclusions.

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* Read before the Section on Pathology and Physiology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926

[1] Wassermann and Keysser: Deutsche med. Wchnschr. **37:** 2389 (Dec 21) 1911.

[2] Neuberg: Ztschr. f. Krebsforsch **10:** 55, 1910. Neuberg and Caspari: Deutsche med. Wchnschr. **38:** 375, 1912. Neuberg, Caspari and Löhe: Berl. klin. Wchnschr. **49:** 1405, 1912.

[3] Izar, G: Ztschr. f. Immunitätsforsch. u. exper. Therap. **15:** 238, 1912.

[4] Izar and Basile: Ztschr. f. Immunitätsforsch. u. exper. Therap. **18:** 64, 1912

[5] Kausch: Arch. f. klin. Chir. **102:** 159, 1913.

[6] Rohdenburg: Colloidal Silver with Lecithin in the Treatment of Malignant Tumors, J. M. Research **26:** 331, 1915

[7] Loeb: Interstate M. J. **19:** 1015 (Jan.) 1912.

[8] Gaube: La cuprase et le cancer, Paris, 1913.

The matter was thoroughly studied on human beings by Richard Weil,[9] who concluded that as much damage was done by the colloidal copper as was benefit received. Phlebitis and periphlebitis were observed; also hemoglobinuria and renal lesions. The liver was not much injured, though it contained considerable copper. Curiously enough, practically no copper was found in the tumor.

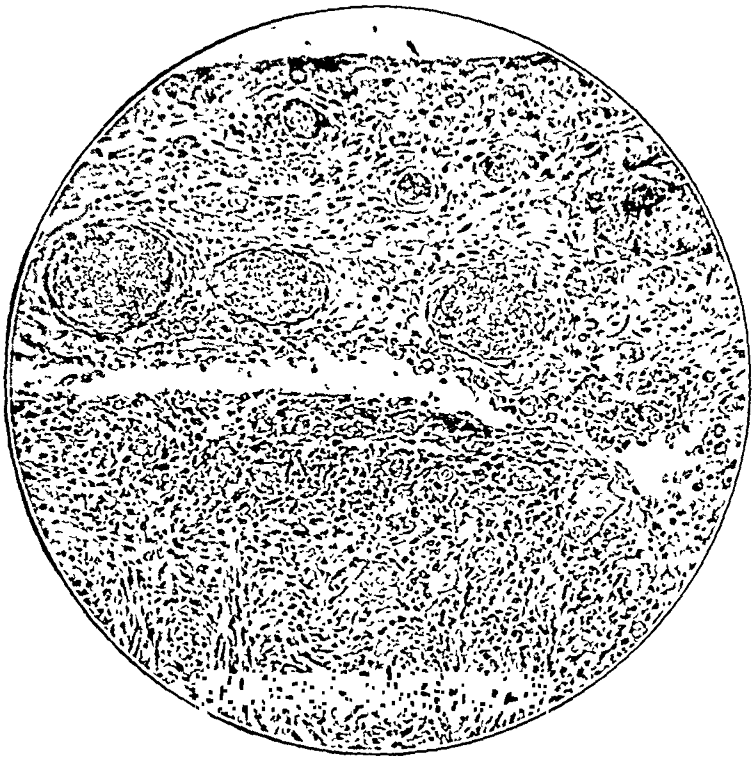

Fig. 1.—Section from the periphery of a rat sarcoma after intravenous lead, to show the intense congestion.

Colloidal gold was used by Carl Lewin.[10] Extensive capillary hemorrhages were found in the tumors after such injections, the result of vascular injury, while the body tissues did not seem to be harmed. Lewin explains the action of colloidal gold and other metals on the assumption that transplanted animal tumors are, in reality, somewhat encapsulated and relatively independent of the rest of the organism. The defective capillary supply of the tumor interferes with the passage of blood through the substance of the neoplasm. When, then, any poisonous material is injected into the general circulation, a larger part of such material is retained in the tumor, as in a sponge, and hence acts with especial intensity in this locality, while the normal organs are not so severely injured because the tumor has filtered out most of the poison and relatively little remains in the general circulation to injure normal structures. Some support to this suggestion may be found in experiments of Keysser,[11] who noticed that though he could cure subcutaneous transplanted tumors of mice by the use of a copper compound, no effect was observed when the tumor was distributed through one of the internal organs, and hence might be supposed to have somewhat more perfect vascularization.

This sums up most of the early work with the direct injection of colloidal metals into tumor-bearing animals and human beings. In recent years a revival of the method has taken place in the attempt to render treatment with the roentgen ray and radium more effective by increasing the local secondary radiation by the presence of heavy metals injected intravenously. Cuprase has been used by some. Others have preferred to carry the copper salts into the tissues by means of a galvanic current, and Wintz believes that tumor tissues are rendered considerably more sensitive to irradiation by this process. Other workers are doubtful that any benefits accrue.

To test the possibility of obtaining secondary radiation effects from the presence of heavy metals in the tissues, Gudzent[12] and others have treated patients with argyria. The skin in this condition contains a considerable quantity of silver, but no difference was observed in the dosage required to produce an erythema on such skin from that of normal individuals, using both radium and the roentgen ray.

While it is perfectly possible to influence by secondary rays bacteria growing on metallic plates and then exposed to heavy doses of roentgen rays, the condition is entirely different when minute quantities of colloidal metals are distributed through the tissues. Gudzent's experiments show this, for he injected animals with large quantities of colloidal iron, copper, silver, platinum, bismuth and gold, and observed no difference in the biologic effect from irradiating these animals and controls. The assumption of Baldwin,[13] who believed that he increased the absorption of roentgen rays by vital staining of white rats with trypan blue, is of course erroneous, for the trypan blue could not increase the absorption of the radiation. He rendered his animals more sensitive to the roentgen ray merely by partially poisoning them. Repetition of Baldwin's experiments in my laboratory, using tumors which are not injured by trypan blue, showed no difference between the lethal dose of the roentgen ray on the tumors deeply stained with the dye and untreated controls.

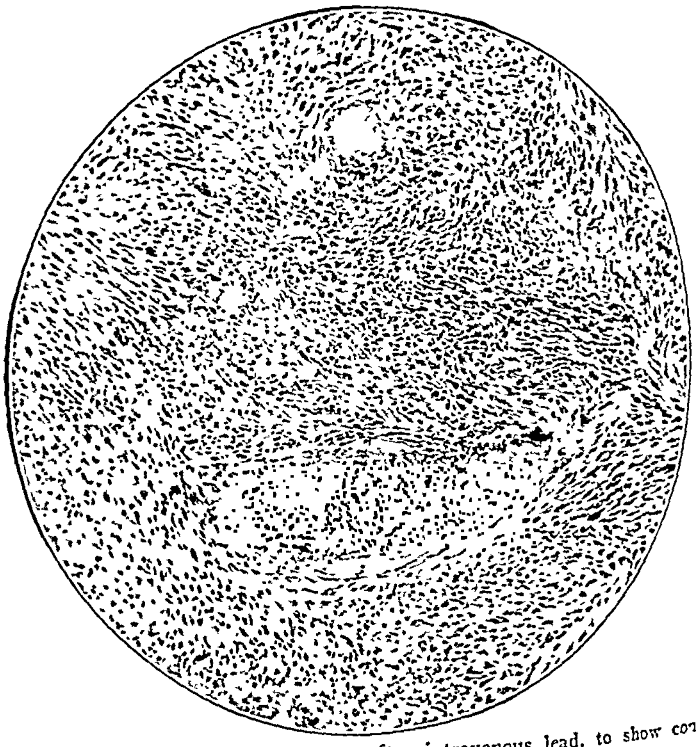

Fig. 2.—Section of rat sarcoma after intravenous lead, to show congestion and thrombosis of the tumor capillaries.

It is probable, therefore, that any beneficial effect that is observed from the combination of colloidal metals and irradiation must be due to the partial poisoning of the cells by the metal, followed by the further injury by the roentgen rays: in other words, the summation merely of the effects of two destructive agents.[14]

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[9] Weil, Richard: The Effects of Colloidal Copper, with an Analysis of the Therapeutic Criteria in Human Cancer, J. A. M. A. **61**: 1034 (Sept. 27) 1913.

[10] Lewin: Berl. klin. Wchnschr. **50**: 541 (March 24) 1913.

[11] Keysser: Wien. klin. Wchnschr. **26**: 1664 (Oct. 9) 1913.

[12] Gudzent: Strahlentherapie **11**: 277, 1920.

[13] Baldwin, W. M.: J. Exper. Med. **37**: 357 (March) 1923.

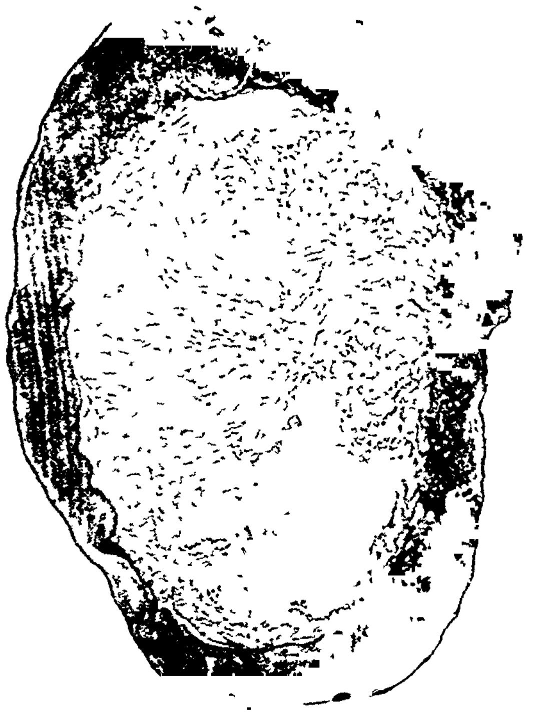

Fig 3 —Rat sarcoma after intravenous injections of colloidal lead, to show central necrosis

This was the situation when W. Blair Bell of Liverpool announced his studies on the action of lead on the trophoblast. He had demonstrated many years before, by observations both on patients in his obstetric clinic and on pregnant animals poisoned by lead, an elective toxic action on these cells. Believing that the trophoblastic cells are biologically closely correlated with tumor cells, he began in 1920 the treatment of human cancer by intravenous injections of lead in colloidal form.[15] Other colloidal metals were tested and found not to be as specifically destructive of the chorionic epithelium as lead. The colloidal form of lead was selected because various lead compounds when tried were found to be highly toxic to the patient and relatively ineffective on tumor cells. The preparation that he uses is a Bredig colloid in 0.4 per cent aqueous gelatin with the addition of 0.027 per cent of calcium chloride. The final product is centrifugalized to get rid of particles larger than 0.2 micron, is made hypertonic by the addition of sodium chloride, 1.1 per cent, potassium chloride, 0.05 per cent, and calcium chloride, 0.05 per cent, and is then sterilized by boiling. The preparation is black or gray, depending on the amount of hydroxide or carbonate that it contains. After two or three days it becomes toxic and must be rejected. The strength is checked by a colorimetric method, and injections made intravenously in quantities not to exceed 0.1 Gm. of lead per dose. During the two to three months that are required for the treatment, about 0.6 Gm. of lead is given.

There are certain points in the selection of patients that have been found to be important. All those with nephritis, even of slight grade, must be rejected, as anuria is apt to follow from the toxic action of the lead on the kidney structures. Obstructive jaundice must be relieved before treatment can be begun. Metastatic involvement of the brain is a contraindication. Extreme anemia and cachexia also are contraindications. With large tumors, it is important to remove as much as possible of the growth by surgery in order to make a more favorable partition of the lead between the normal tissues and the tumor. Roentgen rays may also be employed in conjunction with the lead treatment, and one of the advantages of such therapy is that the effectiveness of the roentgen ray seems to be somewhat increased by the toxic action of the lead. In superficial growths, direct insertion of lead into the tissues by ionization seems to be of benefit. Following the injections, a sharp anemia not infrequently develops, and resort to transfusion may be necessary to counteract this. During the course of the treatment, frequent urine analyses must be made to see that no nephritic insufficiency has developed, and a daily study of the blood is important. If stippling of the red cells becomes very abundant, the treatment may have to be interrupted, for this is one of the early indications of the dangerous toxic action of the lead.

But the treatment of malignant growths by this method is not merely one of the injection of so many decigrams of lead at fixed intervals. Success depends far more on the most careful clinical study of the patient, watching for obvious symptoms and controlling the use of this highly dangerous remedy with knowledge obtainable only by clinical experience. As has been shown by the experimental work already cited, the lethal dose to the animal must be approached in order to affect the tumor, and this Blair Bell has confirmed on his human material. Small doses frequently repeated may lead to chronic lead poisoning, while the same patient bears comfortably a decigram at a single dose. Despite all these difficulties and dangers, the mortality is much less than that of surgery on many

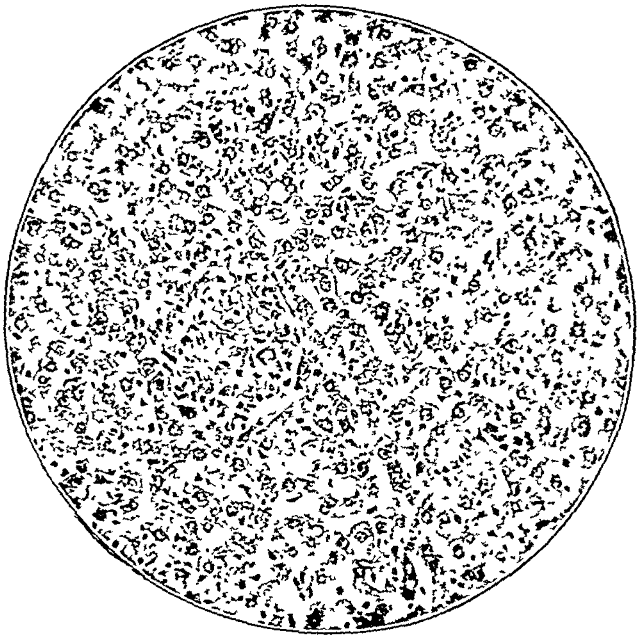

Fig 4 —Focal necrosis in liver after a small dose of colloidal lead.

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[14] An excellent review of this phase of the subject, with bibliography, will be found in an article by Holthusen. Ergebn d med. Strahlenforsch. 1: 385, 1925

[15] Bell, W. B · Lancet 1: 537 (March 13) 1926 This paper sums up much of the work of Blair Bell and his collaborators and contains reference to his previous papers

types of operable malignant tumors; and when it is remembered that out of 227 patients that have been treated, fifty have lived from one to five years in a completely arrested stage, and that all these patients at the time treatment was begun were in a hopelessly advanced stage of the disease, the results of Blair Bell's years of labor are a remarkable contribution to the therapy of inoperable cancer.

For the first time a substance has been found that will arrest the growth of carcinoma for a period of from one to five years, and this in patients both inoperable and beyond the power of irradiation to effect a cure.

The years of cautious laboratory study that preceded the application of this particular substance to cancer therapy, and the carefully developed theory on which the treatment rests, are an excellent demonstration that the converse of Friedrich Müller's famous phrase is true, that an investigation to be truly scientific must not necessarily be done on rabbits.

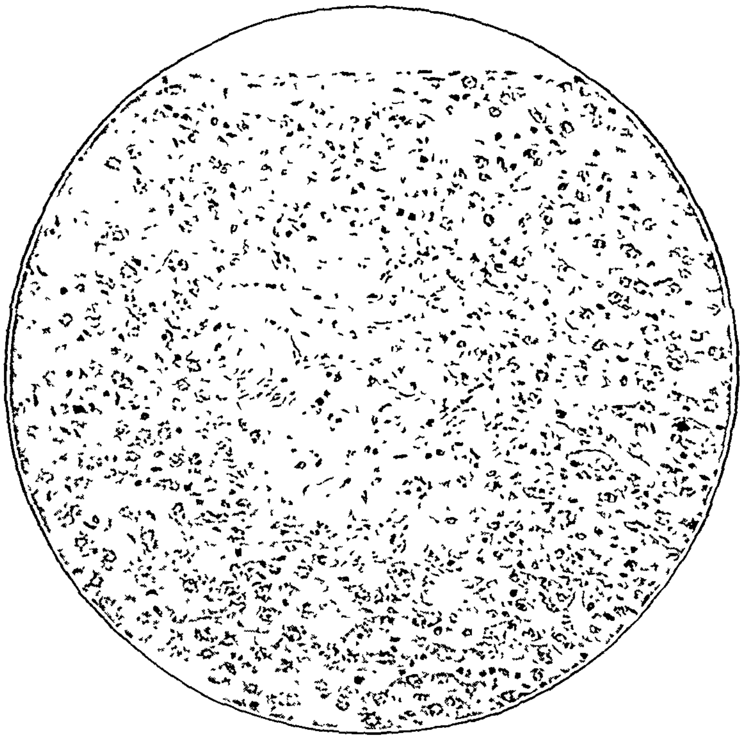

Fig. 5.—Extensive necrosis in liver following large doses of colloidal lead.

For further details concerning the interesting clinical results, the reader should consult Blair Bell's original papers referred to. In them he expresses the opinion that much remains to be done in order to diminish the danger of the treatment and to extend its usefulness, and therefore the preliminary studies on animals that are reported here have been conducted in collaboration with him and the Liverpoor Cancer Committee. One of the first problems is to determine the method of the action of lead and to study the methods of preparation in order to improve, if possible, the beneficial factors and diminish the toxic ones; to learn if possible morphologic criteria which will enable some judgment to be formed as to the probability of a given tumor being of the favorable or unfavorable type; to determine with as much accuracy as possible the optimal combination between the use of lead and radiation, and many other questions that will readily suggest themselves.

Research along these lines is being actively prosecuted in many laboratories. Various organic lead preparations are being made in this country and tested. New types of colloids have been produced which are more permanent and less toxic than that employed by Bell. This may be an advantage or it may not, for it is probable from both animal and human experiments that the less toxic colloid will have to be administered in correspondingly larger doses in order to produce comparable effect on the tumor cells. It is certain that the size of the particles determines to some extent the pharmacologic action of a colloid. The removal of colloidal particles from the circulation is the matter only of a few minutes, and during this period the larger blood vessels probably suffer much less injury than when a soluble product is injected. If the tumor takes up a large proportion of the lead, as Bell has shown from his analyses, the metal can then exert its toxic action on the capillaries and the cells locally, sparing the rest of the body. Ultimately a large part of the lead will go to the bones, and the rest will be excreted through the kidneys and intestinal tract.

Interesting pathologic lesions are demonstrable after the injection of such colloidal lead into the tumor-bearings animals. The first effect on the tumor is the production of an intense congestion. This is in line with the clinical symptoms of patients under treatment, for following an injection of lead there is often a great deal of pain in the tumor for twenty-four hours, after which time the patient becomes more comfortable. The intense congestion observed in animal tumors would explain this phenomenon, for unquestionably there is considerable edema and enlargement of the growth in this first stage (figs. 1 and 2). In animals, at the end of twenty-four hours, thrombi are abundantly present in the tumor capillaries. Whether these are primary, or secondary to changes in the tumor cells is difficult to decide. Such thrombi remove nutriment from the area of tumor which the vessel feeds, and necrosis follows. Absorption succeeds this necrosis and the tumor shrinks, thus relieving the tension on the tissues. In subcutaneous tumors in animals shrinkage is not so noticeable as it is in human beings, though the growth may be converted into a hemorrhagic sac if sufficient lead is given (fig. 3). Usually there remain about the periphery of the tumor a few growing cells, and from these a recurrence may take place unless the dosage of the lead is large and repeated injections are given. If the dose is pushed to the lethal limit and repeated every week for from three to five doses, a certain number of the tumors are apparently completely destroyed. The spleen and bone marrow in animals show considerable injury, as would be expected, and this is reflected in the human patients by the marked anemia that often occurs during the course of treatment. After a number of doses the animals also show the effect of the action on the hematopoietic system by the development of a marked anemia, and extensive morphologic changes in the red cells.

Some of the most interesting lesions are found in the liver, even with very moderate doses of lead; that is to say, 0.5 mg., in a rat of 60 Gm., whose lethal dose is about 4 mg. There will be found a number of focal necroses of small extent (fig. 4). These are quite similar to those observed in human beings in the infectious diseases, and are evidently due to vascular lesions. With large doses approaching the lethal, or still larger, the liver shows very extensive lesions (fig. 5). It is possible that the transient slight icterus observed in some of the human cases during the treatment may be due to similar lesions in the liver. The lungs show no thrombi or other changes. Moderate swelling of the epithelium of the kidney tubules may occur. Only when large doses are given is the complete destruction of the tubular epithelium witnessed, such as is seen in the fatal human cases. I have gained the impression that the rat kidney bears the lead better than the corresponding human organ, but after large doses of lead animals show diminution in the quantity of urine and fairly extensive renal lesions.

Another phase of my studies has been on the lead roentgen-ray combination. When tumors are given 80 per cent of a lethal dose of roentgen rays immediately after a single nonlethal dose of lead, no effect is produced. But if the lead is administered several times, even if the tumor does not recede under the action of the metal, from 80 to 90 per cent of a dose of roentgen ray lethal to the kind of tumor used will cause some, but not all, of the growths to recede. If the secondary irradiation played any part, the irradiation just after injection should be as effective as that done after the lead had time to exert its lethal action. As such is not the case, it is probable that the toxic action is the effective adjuvant of the irradiation.

Great caution has to be used in translating the results of animal experiments to human pathologic conditions, for there is considerable variation even in different species of animals as to the distribution of the lead between the different organs. In cats, for example, a large quantity is often found in the lungs; in other animals the liver may be the chief depot. In general, however, my experimental work confirms that of the similar investigators in the field that colloidal metals produce marked injury to the capillaries of tumors, with thrombosis and subsequent hemorrhage and necrosis of the growth; that this vascular injury may extend to the larger vessels if repeated injections are given, as Weil found with colloidal copper; that in order to produce serious injury or complete the destruction of an animal tumor, the dosage must approach the lethal, as has been found in human beings; and that lead is different from copper in producing rather sharp liver lesions, probably because of capillary injury. It is probable that the lead, as with other particulate matter, is taken up by the reticulo-endothelial system, then assumes some soluble form, and exerts its toxic action on the cells of this system and subsequently on those of the neoplasm. Our lack of complete and accurate knowledge is evident, and I agree with Blair Bell, who feels from his own experience that "the time is not yet ripe for the general employment of lead, for a vast amount of work, experimental and therapeutic, still remains to be accomplished." Certainly this is a sound position.

CONCLUSIONS

Various colloidal metals are effective in producing recession of animal tumors, but lead seems to be the only one that can be successfully applied to the treatment of primary human tumors. The reason for this is that there is probably a double action comprising not only capillary injury and thrombosis, as is observed with other metals, but also a definite toxic effect on the tumor cells.

Any increase in the effectiveness of the roentgen ray is due to the direct toxic action of the lead and not to secondary radiation from the metallic particles.

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ABSTRACT OF DISCUSSION

Dr. George T. Caldwell, Dallas, Texas: Blair Bell and his associates did a very considerable amount of work in trying out the effect of lead and preparations of lead on plants and animals in their growing stages. They came to the conclusion that it was the rapidly growing cells or, probably I should say, the dividing cells that were chiefly affected by the lead. They also emphasized the fact that lead is the only metal which will produce a stunting of growth without actual cell destruction; therefore, the action of lead is apparently a quantitative matter. Many years ago when Ehrlich and his co-workers were working on arsenical preparations and certain principles of chemotherapy were pronounced, it was pointed out that in order for the chemotherapeutic agent to be of importance, the relation between the therapeutic dose and the toxic dose must be at least one to three; that is, that the therapeutic dose must not be more than one-third the lethal dose. If that is true, and the statement made concerning the use of lead can be applied under this heading, it looks as if the use of lead in its present form would necessarily be quite limited. I should like to know what Dr. Wood's notion is of the fundamental underlying reason for the attraction of lead to the growing cells, in that the English workers have emphasized the fact that the tissues to which the lead goes in largest amounts are those tissues which are rich in phosphatids, and intimate that the amount of phosphatids is important in determining the quantity of lead that shall enter any particular area. Finally, it would be interesting to know whether benign tumors or slowly growing malignant tumors are affected to the same extent that the rapidly growing and the more malignant tumors are. This is certainly an important step in the therapeusis of tumors, even if the present agent is not a perfectly satisfactory one for their treatment.

Dr. Edwin C. Ernst, St. Louis: The treatment of cancer by means of colloidal lead has been presented most interestingly, especially from the point of view of a pathologist. Nevertheless, the clinical application of Dr. Bell's work, together with the present limitations and the future possibilities, were also emphasized, based on animal experimentations with colloidal lead and Dr. Wood's initial clinical experiences and observations. Apparently sarcoma is more susceptible than carcinoma. The greater the vascularity, the more efficient the effect of the colloidal lead on tumor cells. In general, these observations also indicate that the toxicity of the lead treatment must be given most careful consideration. We are always confronted with two conditions, the local and the individual organic or systemic reaction. Individually, such reactions may be favorable on the local lesion and selectively unfavorable on the general system and the other organs. I understand that in many of the cases reported either surgery or irradiation was applied in combination with the colloidal lead treatment. Perhaps a safer dose could thus be administered by such a combination. As in our clinical experiences in which we were able to improve both the local and the general vitamin imbalance, it was very evident that the tumor retrogression was more effective even with a decreased amount of roentgen-ray therapy Perhaps this phase of the future colloidal lead in selected treatment may likewise develop into a greater benefit to humanity by a combination with roentgen ray and radium in suitable cases, than when either method is employed singly.

Dr. Francis Carter Wood, New York: A question was asked about the types of tumors benefited. There seems to be no difference. Carcinoma and sarcoma both have been treated with success in about the proportion they occur clinically; that is, ten cases of carcinoma to one case of sarcoma. Some of the most astonishing cases are sarcomas. Practically every patient has had a microscopic diagnosis with the exception of two, in whom it was impossible to obtain a specimen. The striking thing is that these patients gain weight, feel happy and are cheerful. Their color is good, and there is no evidence of any general effect from the lead. Dr. Caldwell's remark about the one-third lethal dose is a very shrewd one. It is a good rule if you can cure with one third of the dose, not to use a full one, but the trouble is that a full dose has to be used to obtain results. We are not trying to poison a parasite but are destroying cells of the body. The trouble with cancer is that we are trying to destroy a cellular organization which is the same as the human body, but only growing a little faster than the normal structures. We therefore have, unfortunately, no great differential to work on. The administration of lead has to be pushed and the patient almost poisoned simply because of that fact. Why does the lead go into the cells? The rapidly growing cells of tumor contain more lead than the organs, but the reason is unknown. The lead may be attracted by the excess lipoids of the growing cells. By analysis, more lead is found in the tumor than in the patient's liver, for example. The reverse is true of copper. Copper goes in larger quantity to the liver. The combined use of the roentgen ray and lead is very promising, though the full value of the procedure remains to be determined by experiment and clinical observation. Benign tumors are apparently not affected. It is unjustifiable to use lead in any but advanced cases. Blair Bell operates on all operable malignant growths, believing that surgery is the method of choice. If inoperable, the use of lead is justified, though it may be wise to remove the bulk of the tumor if possible before beginning the lead treatment.

LIGATION OF THE AORTA

A CLINICAL AND EXPERIMENTAL STUDY *

BARNEY BROOKS, M.D.
NASHVILLE, TENN.

The aorta was first ligated in the human being by Sir Astley Cooper more than a hundred years ago. The patient on whom he performed this operation died. I am not aware of any other case than the one I will briefly present in which the aorta has been completely obstructed and the patient survived as long as my patient. At the meeting of the American Surgical Association in Baltimore in 1924, Dr. Rudolph Matas presented a case in which the aorta had been ligated for abdominal aneurysm and the patient survived the operation for more than a year, subsequently dying from a disease unrelated to the aneurysm. The postmortem examination revealed that the aorta was not completely obstructed by the ligature. This is the longest period any patient has ever survived the operation of ligation of the abdominal aorta, and to this illustrious surgeon credit should be given for perhaps the first successful ligation of the abdominal aorta.

In the experimental laboratory, the late Professor Halsted clearly demonstrated the unreliability of ligating the aorta with any of the ligature material now in use. Halsted also investigated extensively another phase of the problem of ligation of the aorta. If the abdominal aorta is completely obstructed, almost one half of the body must obtain its circulation through channels that have previously not served this purpose. It is rather generally accepted that there is considerable doubt as to the competence of these collateral paths to supply adequate nutrition to the distal half of the body. It is further known that, if an artery is obstructed, the cross section area of these paths of collateral circulation increases so that ultimately the parts of the body deprived of circulation by the blockage of the artery receive adequate circulation to maintain their normal anatomic and physiologic status. Halsted and Matas attempted to create the enlargement of these paths of collateral circulation by partial occlusion of the aorta by metallic bands, in the hope that ultimately the aorta could be completely obstructed without seriously interfering with the volume flow of blood in the lower extremities. Unfortunately, the solution of this problem was prevented by the fact that the partially occluding bands cut through the vessel in very much the same way as a ligature. Halsted also tried other means of partially occluding the aorta by bands of fascia, but these usually gave way, so that ultimately the aortic channel was opened to the same extent as before the operative procedure. The two fundamental problems, therefore, concerned in the ligation of the abdominal aorta are:

1. The ability to obstruct this vessel without the constricting material cutting through the wall of the vessel.
2. A knowledge of an already existing collateral circulation or of a method of its production before complete obstruction of the artery.

REPORT OF CASE

A negro man, aged 59, who was seen first in the Barnes Hospital, St. Louis, Jan. 23, 1925, was admitted to the hospital with the classic signs and symptoms of a very large abdominal aneurysm which filled the entire lower half of the abdomen. The aneurysmal tumor had been present for approximately two years, but during a short interval previous to his admission to the hospital the tumor had greatly increased in size and had become much more painful. Examination of the patient revealed the following significant facts:

1. The cause of the aneurysm was syphilis.
2. The heart was essentially normal.
3. There was a complete absence of pulsation in the left femoral artery and very feeble pulsation in the right femoral artery.
4. The left lower extremity was considerably swollen and was always distinctly cooler than the right.
5. The general condition of the patient was such as to indicate that he was a good operative risk.

February 2, the peritoneal cavity was opened by midline incision which extended from the symphysis pubis to the xiphoid cartilage. The exposed aneurysmal tumor was much larger than had been suspected. It filled the entire lower half of the abdomen and extended far back into the left flank. The wall of the aneurysmal sac, which could be seen through the posterior peritoneum, was very thin. The size of the tumor was such that it was impossible to locate the iliac vessels. The inferior mesenteric artery was identified and its origin traced in the aorta, the abdominal aorta being exposed for a distance of about 1 inch distal to the origin of the mesenteric vessel. The appearance of the anterior aspect of the aorta and the aneurysm was most remarkable, in that the abdominal aorta proximal to the aneurysm was apparently perfectly normal. There was no indication of any disease of the vessel until the exact site of the aneurysmal dilatation was reached, at which point the normal appearance of the artery ceased abruptly. The abdominal aorta and the aneurysmal tumor appeared in a manner that might be compared to a dark blue rubber balloon, sealed to the end of a yellowish white rubber tube. The aorta was then freed posteriorly until a rubber covered clamp could be applied just proximal to the origin of the inferior mesenteric artery. Pulsation in the aneurysmal tumor immediately ceased, but the tumor remained distended and quite firm. This we felt conclusively demonstrated the presence of a very considerable collateral circulation, and it was felt that a complete excision of the aneurysm might be accomplished. A beginning was therefore made in the enucleation of the large aneurysmal tumor. Before this enucleation, however, had progressed very far a rent was

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* From the Department of Surgery, Vanderbilt University Medical School.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

made in the aneurysmal tumor and the entire abdominal wound was filled by a gush of blood. Bleeding through the rent was controlled by insertion of a thumb through the rent into the aneurysmal sac until interrupted silk sutures could be placed, which were drawn together quickly after removal of the thumb. While the thumb was in the aneurysmal sac it was clear that enucleation of this sac was quite out of the question because the posterior wall was formed by the bodies of the lower lumbar and upper sacral vertebrae, which had been partially eroded away by the aneurysmal tumor. Ligature of the aorta was now imperative. Knowing that the application of a ligature in the usual way would in all probability result fatally from its cutting through, we sought to prevent this cutting through by the application of a ligature made of a piece of fascia lata excised from the thigh. The strip of fascia lata, cut approximately 0.5 cm. in width, was passed round the artery twice just distal to the origin of the inferior mesenteric artery. This fascia ligature was tied tightly enough to stop all pulsation distal. A braided silk ligature was then tied tightly about the aorta just proximal to the aneurysmal tumor. There was a space of approximately 1 cm. between the two ligatures. The abdominal cavity was closed.

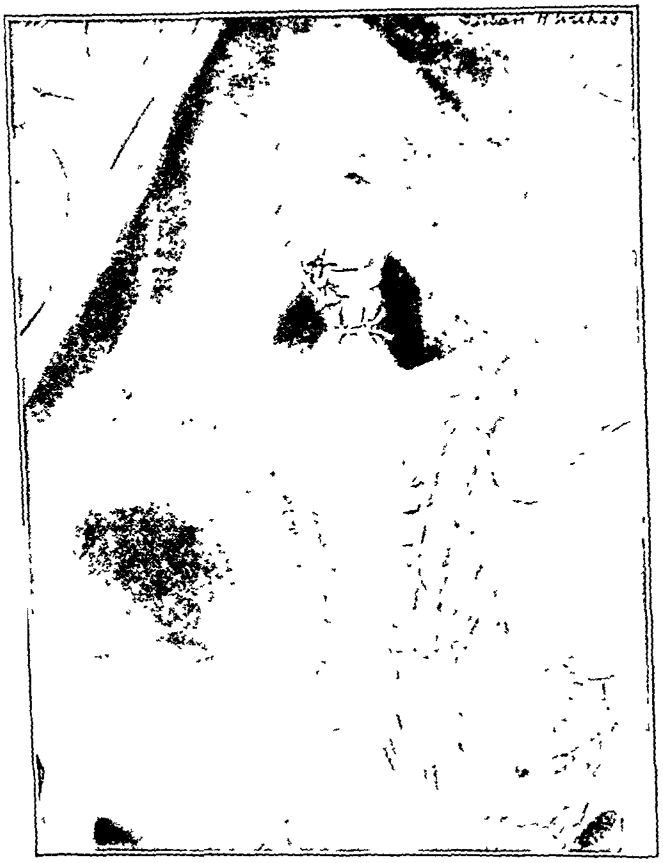

Fig. 1.—Appearance of aneurysm at time of operation, and method of application of ligatures to abdominal aorta.

For the first twelve hours following the operation, the patient's general condition was remarkably good. Both lower extremities, however, remained quite cool, and the application of the tissue temperature tourniquet test revealed no evidence of changes in temperature of the tissues resulting from alternate application and removal of a tourniquet. There was, however, no complete paralysis of the calf muscles and no definite anesthesia of the feet or legs. At the end of twenty-four hours both lower extremities were warm, and there was apparently quite as good circulation through the tissues as before operation. The aneurysmal tumor did not pulsate after operation, and was considerably reduced in size at the end of twenty-four hours. On the fourth day after operation, the patient developed the clinical manifestations of an acute lobar pneumonia and was quite sick for about a week, after which his convalescence was uneventful and he was discharged from the hospital, March 26, approximately five weeks after operation. The patient was seen from time to time after his discharge. The aneurysmal tumor gradually grew smaller and at no time showed any evidence of pulsation. He was completely relieved from all his pain. Pulsation reappeared in the left femoral artery. He recovered his usual health and strength and went back to his occupation as a truck driver. It seemed to us that we would be in a position to report the complete cure of abdominal aneurysm by ligation of the aorta.

May 7, 1925, however, he was readmitted to the hospital stating that he had been perfectly well until four days previously, at which time he had had abdominal pain followed by nausea and vomiting. The vomiting had been persistent and the abdomen had progressively become more distended. On examination it was perfectly clear that the patient was in a moribund condition, in all probability as a result of an intestinal obstruction. He died a few hours after admission to the hospital, it being quite evident that operation would be of no avail in saving his life. At necropsy it was found that death was due to an intestinal obstruction which, in turn, was due to a short band of adhesion between a loop of intestine and the anterior abdominal wall along the line of the previous operative incision. The postmortem examination, however, permitted us to examine carefully the results of our previous operative procedure. The aneurysmal tumor was found to have diminished to a hard mass about the size of a small orange, which was firmly fixed to the vertebral column at the site of the promontory sacrum. The heart, abdominal aorta and iliac vessels were removed in one piece. The aneurysmal sac was completely obliterated. The origin of the aneurysm was in the terminal aorta. Both common iliac arteries opened into the aneurysmal sac. The left common iliac artery had apparently been completely obstructed at the point of its junction with the aneurysmal sac. The aorta was carefully opened at the site of ligation. It was completely obstructed, the occlusion of the aorta being due to a well organized thrombus at the site of ligature. The fascia ligature was easily identified by the knot of fascia through which a black silk ligature had been placed at the time of operation. The knot remained remarkably well preserved. The fascia encircling the aorta, however, had become so confluent with the fibrous tissue about that it could not be traced. The braided silk ligature was found wholly in the organized thrombus in the artery. Both external iliac arteries and hypergastric arteries were patent. The right common iliac vein appeared normal. The left common iliac vein had been completely obliterated in the aneurysmal tumor.

COMMENT

In the study of this case, we have been concerned with more unsolved problems than can be discussed in the time at my disposal. I will therefore only briefly mention a few of the more important ones.

1. The experience with this patient clearly demonstrates that complete occlusion of the abdominal aorta is not incompatible with life and that this procedure promises to be an effectual therapeutic measure for certain aneurysms of the terminal aorta. It is obvious that the successful accomplishment of this procedure in this particular patient was directly dependent on the fact that there existed at the time of operation an efficient collateral circulation. It is an interesting fact, however, that an excellent collateral circulation about a ligature applied proximal to an aneurysm may be the direct cause of the lack of success in the cure of the aneurysm. If the cross section area of paths of collateral circulation is comparatively great, and if these paths are in direct communication with the aneurysmal sac, then this sac will not become obliterated and the aneurysm will recur following the subsequent further enlargement of the collateral paths of circulation.

It has proved of considerable interest to me to speculate as to the relative importance of certain observations made in this case as bearing on the particularly successful result which followed. I am inclined to attribute great importance to the fact that there was practically no pulsation in the femoral arteries previous to operation as an indication of the probable success of the operative procedure. The examination of the specimen indicated that the aneurysm involved the terminal aorta in such a manner as to obstruct completely the left common iliac artery and vein, and undoubtedly to produce great obstruction to the right common iliac artery. This would obviously make it very probable that a part of the blood supply to the lower extremities passed by way of other channels than through the aneurysmal sac before operation. This fact makes the aneurysm in this particular case to be in reality at least partially analogous to a saccular aneurysm, and the operative procedure comparable to the ligature of the neck of a saccular aneurysm. It is therefore my opinion that absence of pulsation in the femoral arteries, associated with an aneurysm of the abdominal aorta, could in all probability be interpreted as a sign that the abdominal aorta could be obstructed without serious danger of gangrene of the extremities. The fact that there was evidence of impairment in the circulation of the lower extremities immediately after operation is proof, of course, that some blood was passing through the aneurysmal sac *before operation* and that the aneurysm was not wholly comparable to a saccular aneurysm.

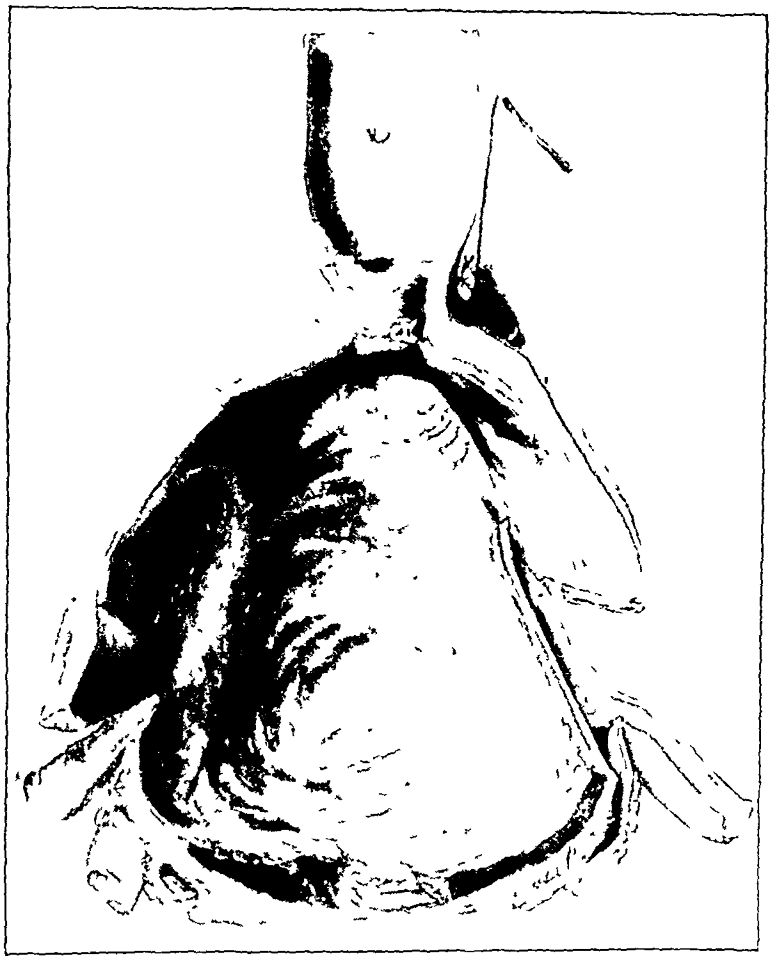

Fig. 2.—Appearance of specimen obtained at necropsy: Aneurysm viewed from *the posterior aspect*; the posterior *wall of the aneurysmal* sac was formed by the bodies of the lumbar and sacral vertebrae; complete obliteration of aorta at site of ligature. The remains of the fascia ligature are marked by the fine silk ligature visible between the aorta and vena cava. The braided silk ligature can be seen to lie completely within the lumen of the obliterated artery. The left common iliac artery is completely obliterated in the wall of the aneurysmal sac. The right *common* iliac artery can be seen to be obliterated almost completely. The cross section of the completely obliterated left iliac vein can be seen *lying* near the left hypergastric artery. The entire aneurysmal sac was filled with partially organized clot.

2. The results of the examination of the necropsy specimen demonstrate clearly that the method of ligature of the abdominal aorta which was employed is not satisfactory. The fascia ligature subsequently relaxed and the silk ligature cut through. Hemorrhage did not occur, but when one examines the specimen one is impressed with the fact that such a result would undoubtedly relatively frequently occur. Here it is interesting to discuss briefly the facts that are probably responsible for the difficulties encountered in successful ligature of the abdominal aorta. In the first place, the abdominal aorta is a large artery; but much more important than this is the fact that it is not surrounded by supporting tissues and gives off at short intervals large branches. If a ligature is applied to one of the larger peripheral arteries, the artery becomes obliterated by a thrombus formation between the site of ligature and the most distal of the proximal functioning branches. It is this plug of tissue in the lumen of the artery that prevents the pulsations reaching the site of the ligature and causing its cutting through. If a ligature is applied to the abdominal aorta, the distance between this ligature and the nearest functioning proximal branch is so short that little or no thrombosis takes place proximal to the ligature, and thus the waves of pulsation continue to beat against the ligature until it cuts through the arterial wall. It was our hope that the constricting band of fascia which we placed proximal to the occluding ligature would diminish at least the intensity of the pulsations so that the ligature would not cut through, and it is possible that the cutting through of the ligature was considerably delayed in our case. However, from the examination of the specimen we are convinced that, for one to have a feeling of safety, further improvement in the method is necessary.

3. The edema of the left lower extremity that existed before operation and improved after operation is worthy of comment. The relationship of edema to impairment of circulation is as yet very little understood. It has heretofore been believed that edema of a lower extremity is usually due to the occlusion of the common iliac vein, and the opinion has been expressed that this edema might be benefited by partial arterial obstruction, which would result in a reestablishment of a balance in circulation. This explanation would be particularly applicable to the succession of events in our patient. This subject has been previously discussed by me in a paper dealing with the results of experimental arterial and venous obstruction. Edema certainly does not follow a progressive arterial obstruction. It is also extremely difficult to produce edema of an extremity by ligating veins. Without going further into the reasons, I am inclined to think that the clearing up of the edema was the result of diminution of obstruction in the lymphatics which followed decrease in the size of the aneurysmal tumor rather than to any changes in the balance between arterial and venous channels.

4. In most instances in which the abdominal aorta has been ligated, the patients have died before there was time for the ligature to cut through or for the manifestations of gangrene to appear. Death has been usually attributed to a greatly increased strain having been put on the heart from the greatly increased peripheral resistance which one would suppose to follow the obstruction of the aorta. In our patient there was no demonstrable change in the blood pressure in

the brachial arteries that could be attributed to the operative procedure. The heart was believed to be slightly enlarged before operation. At the time of death, three months after operation, the heart was found to be essentially normal. There was, therefore, no indication in this case of the occlusion of the abdominal aorta affecting the heart in any way. One interesting fact, however, which should be commented on is that when the patient was admitted to the hospital in practically a moribund condition from intestinal obstruction, the pulse rate was only 60. This is a condition which, as far as I know, is always associated with a rapid, weak pulse. Whether the fact that the aorta had been previously ligated was in any way related to this extremely unusual phenomenon, I do not know.

5. Finally, it might be worth while calling attention to some points bearing on the surgical treatment of aneurysm. Ligature of the artery proximal to the aneurysm, as every one knows, is usually not a satisfactory treatment for aneurysm. In general, it may be said that if there is an excellent collateral circulation, proximal ligature does not cure the aneurysm. If the collateral circulation is not well developed, gangrene of the tissues previously supplied by the artery will result. The reasons for the success of this operation in the cure of the aneurysm in this case have already been discussed. In general, it is my belief that simple ligature of the artery either proximal or distal or both proximal and distal is not the correct surgical treatment for aneurysm. The Matas operation is much more satisfactory. It is obvious, however, that the Matas operation was not applicable to this case, and I can see little prospects for the Matas operation ever being applicable to the treatment of aneurysm of the abdominal aorta. It is my belief that the ultimate satisfactory method of the surgical treatment of abdominal aneurysm, if it is ever attained, will be the development of methods that make it possible to excise completely the aneurysmal sac.

ABSTRACT OF DISCUSSION

Dr. Rudolph Matas, New Orleans: The success obtained by Dr. Brooks' ligation is record making. I did an abdominal ligation years ago and the patient lived one year, five months and nine days after the ligation. Apparently death was caused by pulmonary hemorrhage induced by tuberculosis and cavity formation in the lung.

Dr. J. Shelton Horsley, Richmond, Va.: About a hundred years ago the first ligation of the abdominal aorta was done by Sir Astley Cooper. Since then there have been about twenty proximal ligations of the aorta for aneurysm. Only two of these cases may be said to be successful. In one of these the operation was done by Dr. Rudolph Matas, and in the other by Dr. Barney Brooks. A third ligation of the abdominal aorta which may be said to have been partly successful clinically was made by Dr. George Tulley Vaughan of Washington, D. C. He applied a ligature on the aorta on the distal side of the aneurysm. The patient lived in very good health for two years and one month after the operation. The necropsy showed that the aneurysm was not cured, but had apparently been benefited. It is difficult to restrain enthusiasm for the admirable way in which Dr. Brooks managed his case. It may be possible that the accidental opening of the aneurysmal sac during the operation was beneficial, because it doubtless lowered the blood pressure, and the trauma on the interior of the sac probably promoted thrombosis. A year ago, before the Section on Pathology and Physiology of this association, my son, Dr. J. S. Horsley, Jr., presented some experimental work on the healing of blood vessels after ligation. He found that there was a marked difference between the healing of a vessel ligated in continuity and the healing when the vessel was doubly ligated and divided. In the latter instance the intima of the stump exposed to the surrounding raw surface obtains additional nutrition and makes a firm closure. In ligation in continuity, however, even with double ligation, there is no exposure of the intima, and not infrequently the lumen of the artery, particularly if it is a large artery, opens again. I should like to ask Dr. Brooks what in his judgment would be the effect of a triple ligation of the aorta with the division of the aorta between the two distal ligations, and possibly bringing a stump of muscle over from the adjoining psoas muscle to the proximal stump of the aorta in order to produce a firmer union.

Dr. Barney Brooks, Nashville, Tenn.: The problems involved in the treatment of aneurysm of the abdominal aorta are different from those of the treatment of aneurysms of the peripheral vessels. The Matas operation is certainly the best treatment for aneurysms of peripheral vessels. I doubt very seriously whether the Matas procedure can ever be applied to aneurysm of the abdominal aorta. It is my belief that any future development of a satisfactory operative procedure for the cure of aneurysm of the abdominal aorta will include the excision of the aneurysmal tumor. This will necessitate complete occlusion of the aorta. In order to occlude the aorta completely it will be necessary to devise some technical procedure that will minimize the danger of the cutting through of the constricting ligature. The accomplishment of this, I believe, lies in the ability of the operator to secure a certain amount of occlusion of the lumen of the artery proximal to the ligature by the formation of intravascular living tissue. The other problem involved in the occlusion of the aorta is the development of a method that will bring about this occlusion slowly enough for the establishment of the circulation through collateral channels. Experimentally we have been able to accomplish this by a specially devised clamp.

CHRONIC EXPERIMENTAL ULCER OF THE STOMACH

ITS CLINICAL SIGNIFICANCE *

JOHN A. WOLFER, M.D.
CHICAGO

In a critical study of chronic peptic ulcer, it is apparent that there is present only one constant, invariable and known factor; viz., the ulcer. The cause of the ulcer or its chronicity is a matter of dispute, and therefore it cannot be considered as a factor in an experimental study. Moreover, the mechanism of the production of the associated perverted function and its attendant symptomatology is still unknown.

The study of chronic ulcer from an experimental standpoint would be facilitated if such a chronic lesion could be produced in the experimental animal. If this can be accomplished, we have then established the specific anatomic and physiologic factor in the study of ulcer and its perverted gastric function and resultant symptomatology. The method of the production of the ulcer should not, if possible, disturb the normal physiologic and anatomic status of the animal and should be infallible, since the only definite proof of the existence of an ulcer is by visual inspection, which necessitates an operation.

I[1] have recently described a method that has produced a chronic ulcer in the dog's stomach in every case in which it has been employed. In brief, the procedure consists of the exposure of the mucosa of the stomach to thirty minutes roentgen-ray irradiation at 110 kilovolts, 5 milliamperes current, 6 inch spark, no filter. The size of the ulcer can be controlled by the area exposed and the length of the time of irradiation.

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* From the department of Experimental Surgery, Northwestern University Medical School.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Wolfer, J. A.: Proc. Soc. Exper. Biol. & Med. 22: 45, 1925.

THE ULCER

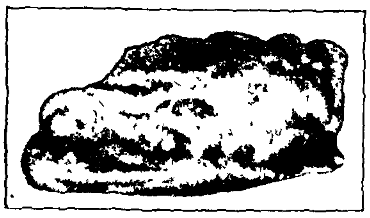

Fig. 1.—Shallow ulcer about 1 cm. in diameter, in dog 3 on exploration sixty-nine days after irradiation.

The ulcers as observed in the living animal have many of the characteristics of chronic peptic ulcer in man (figs. 1, 2, 3 and 4). *Grossly, the lesion appears* as a defect in the wall of the stomach, characterized by an absence of the mucosa and submucosa, with *at times part or all of the* underlying muscular layers (fig. 5). As a rule, a stellate scar can be found in the serosa, and to this scar tags of omentum may be attached. It has been found that the ulcer varies materially in its appearance. At times it appears as a very superficial lesion, involving only the mucosa, and little if any change can be noted in the adjacent structures (fig. 6). The base and periphery are not thickened, and in these cases no scar is present in the serosa. In other cases the base is distinctly thickened and indurated, the process extending into the periphery. Occasionally a polypoid-like growth is present at the margin, and the lesion at times has the characteristic terraced appearance. In the early cases, the floor has a dirty grayish aspect, and when lightly scraped with an instrument it does not bleed. When healing is in progress, the floor is pinkish and bleeds readily when lightly scraped with an instrument. If the ulcer is deep, the edges have a tendency to roll inward (fig. 5). Those ulcers which involve the muscular layer to a considerable extent heal more slowly than if the mucosa and submucosa alone are destroyed.

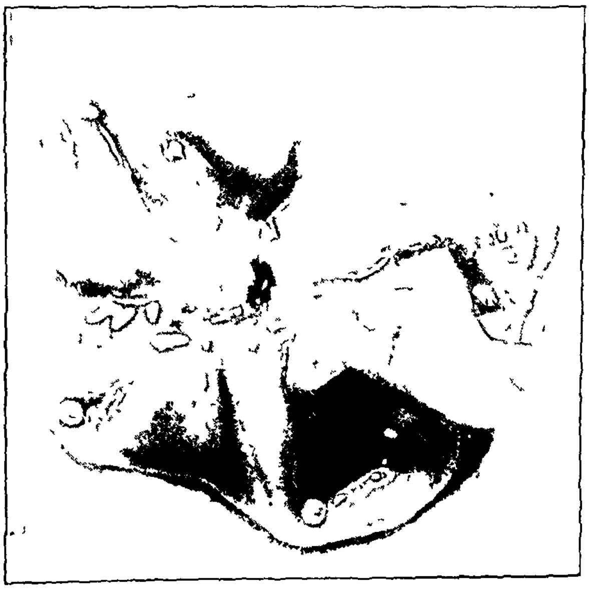

Fig. 2.—Same ulcer as in figure 1, 585 days after irradiation.

Gastric Secretory Response and Emptying Time of Stomach in a Series of Animals

Number	Average Hydrochloric Acid Free	 Combined	 Total	Single High Free	Average Content, Cc.	Average Emptying Time
			Before Ulcer Production			
11C	9.6	25.3	34.9	18.0	315	3 hours, 5 minutes
12	2.16	14.0	16.16	9.0	237	2 hours, 22 minutes
13	3.2	21.9	25.1	9.8	209	2 hours, 45 minutes
14	6.7	24.6	31.3	29.0	168	2 hours, 40 minutes
15	2.1	13.9	16.0	6.0	198	2 hours, 5 minutes
16	0	19.0	19.0	0	269	2 hours, 31 minutes
17	0.7	28.8	29.5	5	217	2 hours, 29 minutes
			After Ulcer Production			
11C	4.9	26.5	31.5	12.0	252	2 hours, 41 minutes
12	13.2	23.0	36.2	24.0	...	2 hours, 26 minutes
13	1.1	18.2	19.3	10.0	175	2 hours, 36 minutes
14	10.8	25.1	35.9	26.0	209	2 hours, 37 minutes
15	0	17.0	17.0	0	165	2 hours, 32 minutes
16	0	21.0	21.0	0	223	4 hours, 15 minutes
17	2.3	31.8	34.1	14.0	218	3 hours, 55 minutes

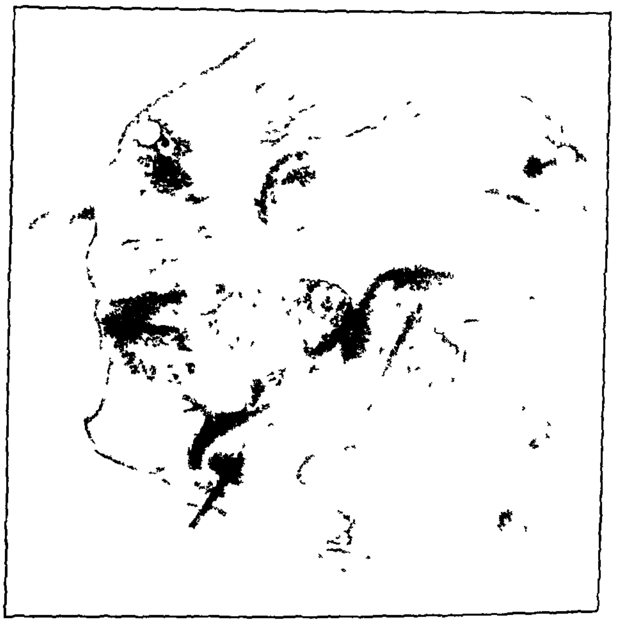

Fig. 3.—Ulcer in dog 14, 294 days after irradiation. This ulcer caused no change in the gastric secretion or motility.

The histologic examinations of these ulcers reveal interesting details. The floor of the ulcer is covered with an exudate consisting of broken down tissue cells and leukocytes. This layer of exudate may rest on the muscular coat. In spite of the fact that the base of the ulcer feels thickened and indurated, in certain cases there is little if any connective tissue present. *Portions of the muscle are edematous, with here and* there areas of leukocytic infiltration (fig. 7). These are the cases which show no scar in the serosa. In those cases with the scar in the serosa, connective tissue can be found replacing portions of the muscular layer in the base of the ulcer (fig. 8). It is interesting to note that normal muscle can at times be seen lying between the floor of the ulcer and areas of muscle degeneration and fibrosis. In some of the ulcers, there is found distinct evidence of endarteritis, with at times hyaline degeneration of the walls. It appears that in the base of the ulcer and in the immediate periphery there are fewer blood vessels than normally, except in areas of well defined connective tissue. In the process of healing, the epithelium can be seen creeping over the floor of the ulcer, often in a single layer (fig. 9).

This pathologic picture is not unlike that of chronic peptic ulcer in man, with the possible exception that the vascular changes are perhaps more marked and there is less deposition of connective tissue, although rather extensive arterial changes are not uncommon in infected peptic ulcer in man. Likewise, not a few human ulcers show a very limited amount of connective tissue.

These experimentally produced ulcers have a tendency to heal slowly, the process requiring from 200 to 600 days. I believe that the chronicity of these ulcers is due to structural changes in the stomach wall and that the repair is little if any delayed by the acid gastric juice. In fact, it is not unlikely that the presence of acid lessens the possibility of secondary infection of the ulcer and further prevents possible putrefactive changes in the stomach contents. I am satisfied that other factors must be present in the genesis of chronic peptic ulcer besides destruction of the gastric mucosa and the ever present acid and motility.

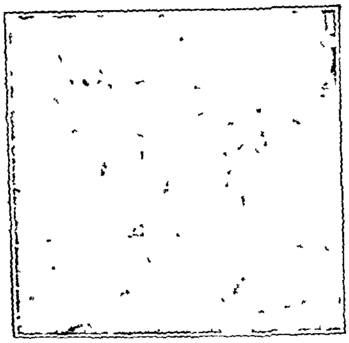

Fig 4.—Ulcer in dog 21, 192 days after irradiation

Having to our satisfaction produced the specific anatomic and physiologic factor in the study of ulcer, our next problem was to observe what effect it might have on the gastric function of the experimental animal and at the same time note any symptoms that might appear. I[2] have shown that, when the ulcer is situated on the posterior wall of the stomach at the lesser curvature near the pylorus, the secretory response of the stomach is not increased above the range of normality as shown in the accompanying table. The animal thrives under ordinary dietetic and hygienic conditions. His appetite is good, and he appears to have no pain. We have observed no vomiting. In one animal in which perforation of the ulcer occurred sixty-three days after irradiation, there appeared, so far as we could determine, no warning symptoms. True, the acid curve was higher than in the other animals, but close observation disclosed that this dog ate his feces, and it is known that such a procedure stimulates gastric secretion.

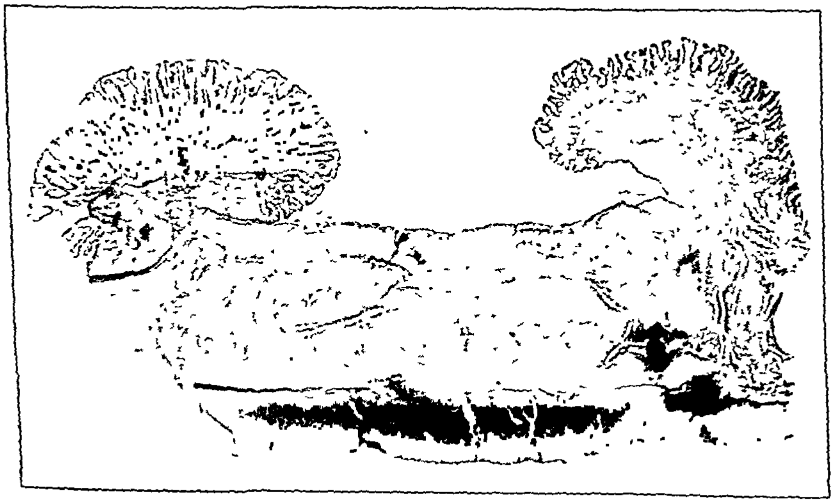

Fig 5.—Ulcer shown in figure 4, × 8. This illustrates the inrolling of the margin of the ulcer, the light area in the base is edema of the muscle.

These studies on the emptying time of the stomach are interesting in that they show that if the experimentally produced ulcer is situated close to the pylorus —1 inch—there is a definite delay, but when the ulcer is 2 inches or more from the pylorus there is no delay, as shown in the table.

COMMENT

There is no question but that a chronic ulcer can be produced in the dog's stomach and that this ulcer is grossly and microscopically similar to chronic peptic ulcer in man. In the experimental animal, this ulcer does not increase the gastric secretory response. When the ulcer is close to the pylorus, there is a delay in the emptying time of the stomach; but when it is situated 2 inches from the pylorus, the stomach empties in normal time. Moreover, this ulcer, as far as we can determine, causes the animal no symptoms.

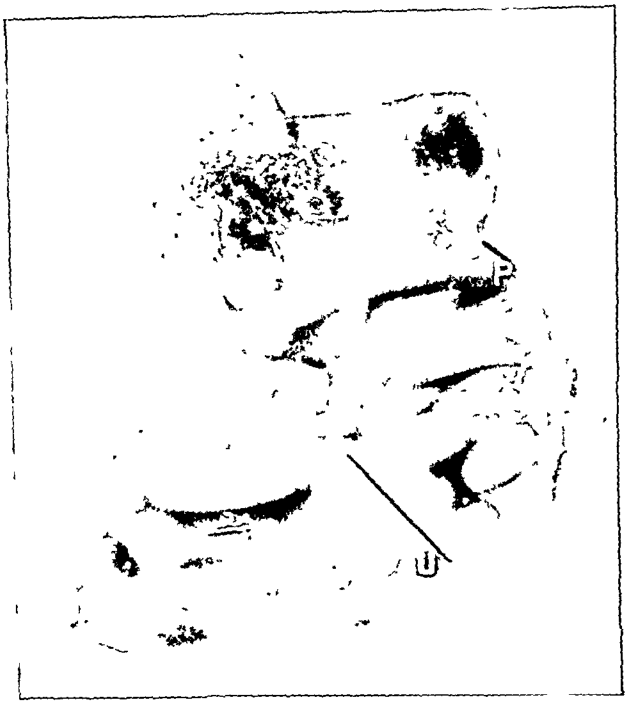

Fig 6.—Ulcer in dog 16, 104 days after irradiation. The ulcer is very superficial and is situated 1 inch proximal to the pylorus on the posterior wall. It caused no change in gastric secretion but was associated with a distinct delay in the emptying time of the stomach.

It is conceded by many gastro-enterologists that hyperacidity and hypersecretion are by no means constant in chronic peptic ulcer. In fact, a careful survey will indicate that in quite a large percentage of cases the acid secretion is within the normal range.

That peptic ulcer in man at times produces gastric retention is beyond question, even when the ulcer is some distance from the pylorus. This retention is often accompanied by hyperperistalsis. In our experiments we were able to demonstrate this delay in the emptying time of the stomach, but it was necessary to place the ulcer very near the pylorus. Since the ulcer did not anatomically constrict the pylorus, the delay in emptying time is accounted for by a pylorospasm. This would indicate that the ulcer has only a very narrowly circumscribed effect on the intrinsic nervous mechanism.

When we compare our experiments with observations made in cases of peptic ulcer in man, it seems quite logical to assume that in man other factors, aside from the ulcer are present which play a rôle in the production of the perverted function and its attendant symptomatology. The roentgen-ray ulcer should, from an anatomic standpoint, cause any perverted function that peptic ulcer causes in man.

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[2] Wolfer, J A.: Ann Surg, July, 1926

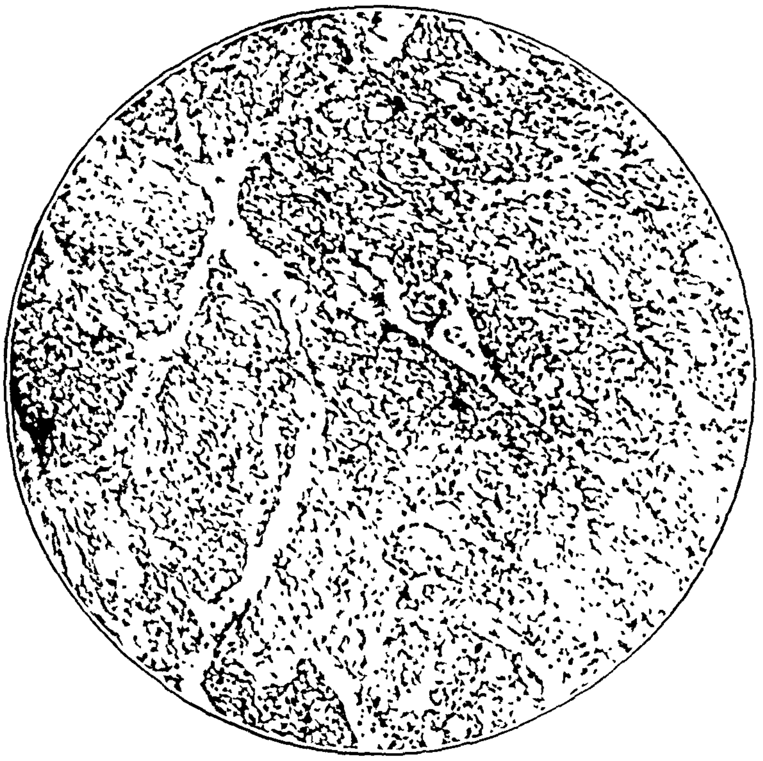

Fig. 7.—Edema of the muscle in the base of the ulcer illustrated in figure 5, slightly reduced from a photomicrograph with a magnification of 150 diameters.

It is common knowledge borne out by daily observations that the worry, stress and strain of present day business and social activity become manifest in an aggravation of gastric symptoms in ulcer. The cessation of symptoms does not mean that the ulcer has healed or even that it is in the process of healing. We have all seen cases in which severe hemorrhage or perforation has taken place, the previous symptoms being so vague that they in no wise suggested ulcer. Moreover, we all know the beneficial effects derived by an ulcer patient who is sent away to enjoy himself in a pleasant warm climate, relieved from all responsibilities and cares.

We believe that certain stimuli are initiated by a chronic peptic ulcer. Some of these stimuli may traverse a local reflex arc in the stomach wall, causing certain responses in secretion or muscle tone. This must be the case, since the stomach can be isolated from the central nervous system and yet secretory and motor responses occur.[3] Other of these stimuli are carried to the central nervous system, there augmented by psychic stimuli and transmitted to the periphery, again to manifest themselves in the form of pylorospasm and possibly hypersecretion or hyperacidity. The intrinsic nervous arc in the wall of the dog's stomach is probably quite small, since the lesion that initiates a pylorospasm must be close to the pylorus. In man it may be larger, but the supposition is that the psychic factor is more prominent. If such is the case, these secondary secretory and motor phenomena, which may contribute toward the chronicity of the ulcer as well as toward the production of the distressing symptoms, might be relieved by the application of some form of treatment toward the relief of the psychic element. Further clinical and animal experimental work is necessary to establish this as a fact.

SUMMARY

1. The ulcer is the only invariable known factor in the study of peptic ulcer.

2. This specific anatomic and physiologic factor can be produced in the experimental animal.

3. The experimental ulcer does not cause hyperacidity or hypersecretion in the dog.

4. When the ulcer is near the pylorus there is a definite delay in the emptying time of the stomach, but if it is some distance from the pylorus there is no delay.

5. A comparative study indicates that the psychic factor in man plays a distinct rôle in the production of perverted function in peptic ulcer.

30 North Michigan Avenue.

ABSTRACT OF DISCUSSION

Dr. Urban Maes, New Orleans: Despite the enormous number of clinical, pathologic, anatomic and physiologic researches directed toward the solution of the problem, the etiology of peptic ulcer still remains obscure. Some definite conclusions may perhaps be arrived at from the method which the author has outlined of producing and studying the disease under uniform conditions. In what way constitutional and congenital anatomic factors are responsible in certain congenital anomalies is not clear. The capillary vascular supply in conjunction with certain disharmonies of the vegetative nervous system may play a part, especially when associated with constitutional predisposition. Acute erosions, whether embolic in origin or traumatic, due to food traumatism and a constant acidity, may be a cause. Foci of infection are worthy of consideration as the source of emboli. Only these points seem settled in the genesis of peptic ulcer: first, the formation of the acute erosion by trauma, circulatory deficiencies, endocrine dyscrasia, or failure of the autonomic nervous system; second, either the healing of these erosions or the formation of a chronically progressive lesion which involves the deeper parts and causes the characteristic clinical syndrome.

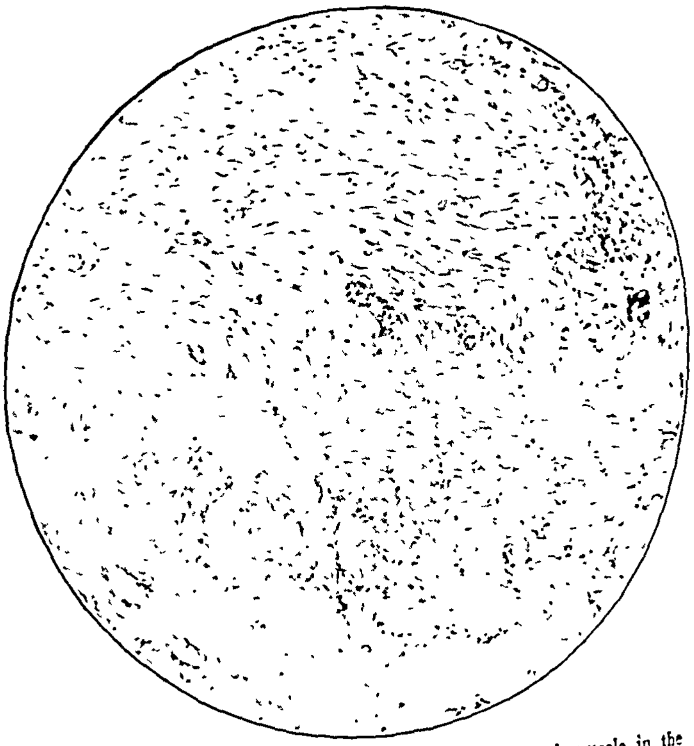

Fig. 8.—Line of demarcation between scar tissue and muscle in the base of an ulcer, slightly reduced from a photomicrograph with a magnification of 150 diameters.

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3. Carlson, A. J.: Am. J. Physiol. 32: 369, 1913.

Dr. E. Starr Judd, Rochester, Minn.: Many are familiar with the experimental work done by Dr. Mann in the production of ulcer. Within the last year Dr. Morton has carried out similar experiments in an attempt to produce gastric ulcer experimentally. Dr. Mann's operation, which results in the production of ulcers in the duodenum in practically every instance, consists in first separating the duodenum from the pylorus, closing the end of the duodenum, separating the lower end of the duodenum from the jejunum, and anastomosing the lower end of the duodenum to the ileum. The effect of that is a drainage of the bile and pancreatic juice and duodenal secretions into the lower intestinal tract. Then the jejunum, which was taken over from the duodenum at this point, is anastomosed to the stomach, so that the unchanged gastric secretions go directly into the jejunum. In the first series of sixteen dogs this resulted in the formation of an ulcer, a true chronic ulcer, in fifteen instances. Morton's experiments have consisted in the excision of the gastric mucous membrane in four areas of the stomach. He first excised a piece of mucous membrane from four areas. In each of these experiments the traumatized area healed very promptly. In the next series, he performed Mann's duodenal drainage operation first and secondly traumatized the gastric mucous membrane or excised a piece of it from these four areas. Twenty-six days after this was done, the stomach was entirely healed. Healing was much slower, however, after duodenal drainage than in the normal dog. In two cases, chronic ulcers persisted. Regarding the point of gastric motility, Dr. Wolfer's experiments do not quite agree with our clinical findings. Surgeons have had an idea that an ulcer situated in the body on the lesser curvature frequently interferes with gastric motility. We have found that if we excise a V-shaped piece of the lesser curvature of the stomach we may produce absolute inability of the stomach to empty. Alvarez thinks this probably comes from interference with peristaltic rhythm. If the rhythm of peristaltic contraction is broken in the lesser curvature, the stomach is unable to empty. So in excising ulcers anywhere on the lesser curvature we always accompany the operation with a gastro-enterostomy.

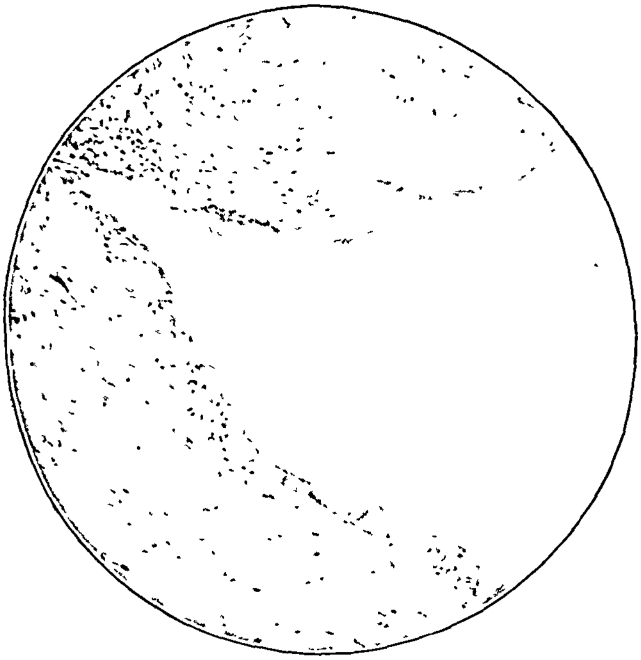

Fig. 9.—Ulcer depicted in figure 5: The epithelium can be seen covering the ulcer floor in a single layer; slightly reduced from a photomicrograph with a magnification of 140 diameters.

Dr. John Adams Wolfer, Chicago: The ulcer that is some distance from the pylorus is perhaps a cause of delay in the emptying time. The only explanation I can offer is that the reflex arc in the stomach of the animal is undoubtedly shorter than it is in the human being and that, as mentioned in my paper, psychic influences in man play a greater rôle. With regard to one point on trauma referred to by Dr. Judd, we are making experiments to study the regeneration of gastric mucosa. It appears that when an area of gastric mucosa an inch in diameter is excised, this area will be found covered by epithelium in a short time—approximately two weeks. This rapid regeneration takes place in spite of gastric acidity and motility. This study is simply a beginning. Although it has been going on since 1923, we are not in a position to offer any final conclusions or deductions except to offer the results of our experiments to date. We are continuing these experiments in the hope that eventually we shall arrive at some definite conclusion.

CHRONIC NONSPECIFIC INFECTIONS OF THE LUNGS

THEIR BRONCHOSCOPIC AND ESOPHAGEAL PHASES *

CHEVALIER JACKSON, M.D., Sc.D.
PHILADELPHIA

As the late D. Braden Kyle used to teach, the fundamentals in the treatment of disease are: What is the lesion? Where is it located? What is its cause? In investigation into all these fundamental questions, in cases of chronic lung suppuration, the bronchoscope can render invaluable aid in certain selected cases. The pediatrician can tap, look and listen on the outside; the roentgenologist can look through the patient; the bronchoscopist can look at the lesion inside the lung. With proper cooperation we have here a team that will work out the best possible end-results for the patient. It seems scarcely necessary to add that, except in foreign body cases, the bronchoscopist is merely an assistant whose aid is sought when needed to contribute to diagnosis or treatment. It would be utterly unjustifiable for him to undertake alone the diagnosis and treatment of lung suppuration.

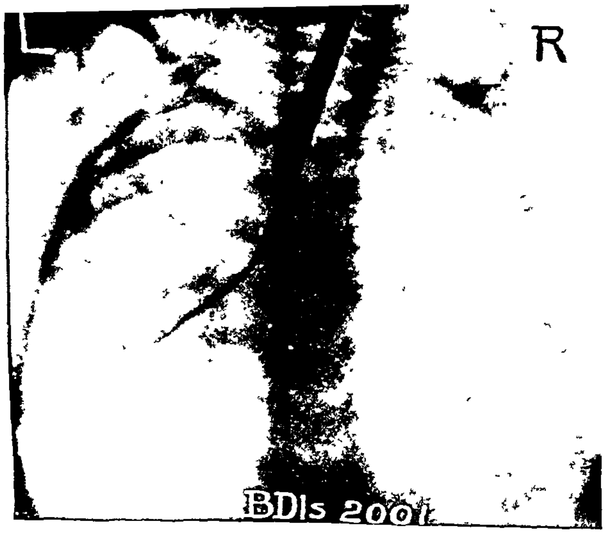

Fig. 1 (case 1).—Bronchoscopic dilatation of a congenital web-stenosis of the left main bronchial orifice that was the cause of suppurative disease of the left lung. A number of bronchoscopic dilations resulted in complete cure. Film made by Dr. Willis F. Manges.

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* Read before the Section on Diseases of Children at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

J. C. Gittings,[1] a pediatrician who has seen much of bronchoscopy, writes:

> Great value attaches to the endoscopic examination of the air passages in children in the diagnosis and treatment of various conditions. In any condition causing symptoms of respiratory distress or dysfunction, where ordinary clinical or roentgenological examination fails to give conclusive evidence, the bronchoscope, in skilled and experienced hands, often is invaluable for diagnosis. Great help can also be afforded in aspiration of pseudomembrane and the hypersecretion attendant on laryngitis, tracheitis, bronchitis and bronchopneumonia occurring in infants or asthenic children whose powers of expulsion are weakened. Lung abscesses, treated early, can be cured, and there is evidence to prove that some cases of massive collapse of the lung also can be relieved promptly.

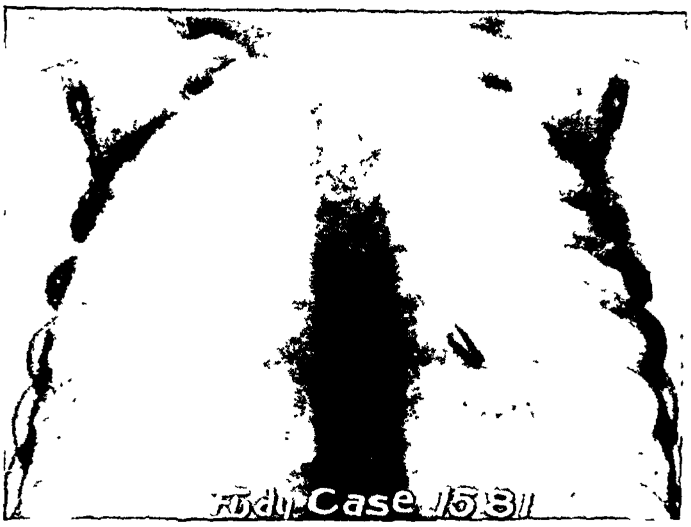

Fig. 2 (case 2).—Typical example of many cases of overlooked foreign body as a cause of chronic lung suppuration: A girl, aged 4½ years, was supposed, for a year and a half, by successive practitioners, to have asthma, asthmatic bronchitis, pulmonary abscess, and tuberculosis for which climatic treatment was advised. The mother insisted on the roentgen-ray examination that revealed the staple, the bronchoscopic removal of which completely cured the patient. Film by Willis F. Manges.

The bronchoscopic and esophageal phases of the subject of this symposium may be considered under four heads: etiology, diagnosis, prophylaxis and treatment. Under each of these heads may be grouped certain illustrative cases that have been observed in the bronchoscopic clinics of Philadelphia.

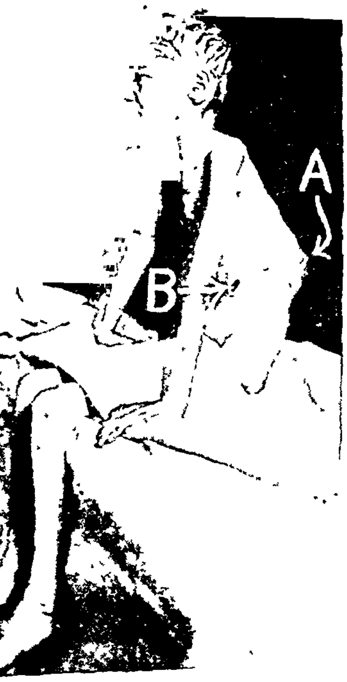

Fig. 3 (case 4).—*A*, a lar
ous purulent accumulation
aged 10 years, an extension
nary abscess due *to a coin* (
overlooked in the esophagus (
chus) for six years. A similar
accumulation had been evacuated
admission and the fistula (*B*) w
discharging at the site of evacuat
The coin did not follow the pus.
epithelized fistula had been establish
by the coin between the esophagus an
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ETIO

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of pus in acute and subacute suppuration; the overlooking of foreign bodies in the lung; the overlooking of foreign bodies in the esophagus, and the overlooking of complications of tonsillectomy. Having overlooked the etiologic factor in, probably, as many cases as any one, I feel qualified to speak freely on these subjects.

Stagnation.—The natural physiologic drainage of the lung is by cough and ciliary action. Our investigations at the bronchoscopic clinic indicate that, when an acute infective process has been followed by a subacute condition and this in turn is in process of drifting into chronic suppuration, there is stagnation of pus and secretions in the affected portion of the lung. When in such a case, after the patient has coughed and coughed until he can get no more sputum up, we go down with a bronchoscope and find foul, discolored pus, we feel justified in saying there is stagnation. In spite of the cough, the pus has remained long enough for the saprophytes to decompose it. When we relieve this stagnation by bronchoscopic aspiration, the odor disappears and usually a prompt cure follows. We feel that in these subacute cases, especially, bronchoscopic aspiration will be a large factor in the prevention of chronic bronchitis, bronchiectasis and chronic abscess.

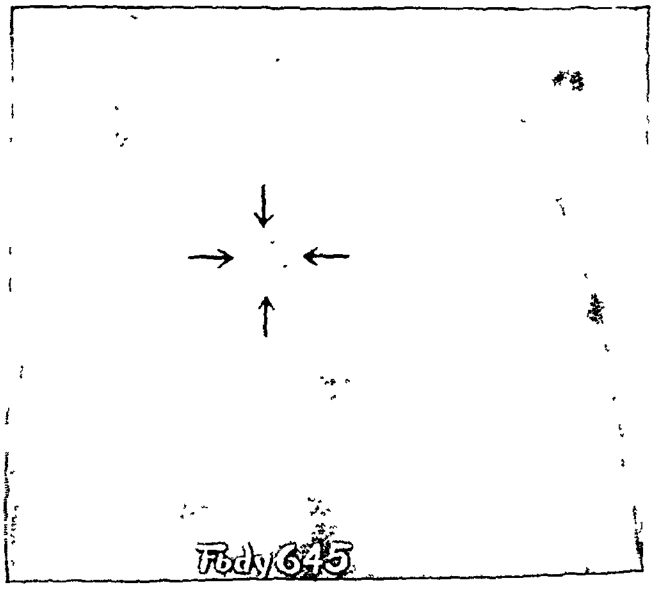

Fig 4 (case 5)—Arrows point to part of a mouth-gag inspirated during tonsillectomy. Atelectasis with beginning suppuration of the left lung was arrested by bronchoscopic removal. This case illustrates the value of early diagnosis in the prophylaxis of chronic lung suppuration. Film by David R. Bowen.

Bronchial Obstruction.—Any form of obstruction to the ventilation and normal upward drainage by ciliary and bechic action will certainly end in chronic suppuration. The diagnosis as to the nature of the obstruction can be made by bronchoscopy through the mouth, without anesthesia, general or local, in a few minutes, and usually with great accuracy. When a bronchus is obstructed by a foreign body, stricture or web, or granulation tissue, thick pus, or membrane, bronchoscopy is
nly method of removal worthy of a moment's
ration.

ital Bronchial Stenosis.—This condition is
so rare a cause of chronic pulmonary sup-
he paucity of literature on the subject
indicate.[2] Congenital narrowing of a
t afford distinctive physical signs or
ce of its existence when pathologic

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1. Gittings, J. C. Personal communicati

tion of the Main Bronchus with Report of
35: 15 (Feb.) 1925.

sequelae of obstructed drainage have supervened There are only two means of diagnosis, pneumography and bronchoscopy.

Congenital Web of the Bronchus.—While this condition cannot be said to be a common cause of chronic pulmonary suppuration, it is perhaps more common than the literature of the subject would indicate. The only method by which a positive diagnosis of web can be made is with the bronchoscope. In the three cases at the bronchoscopic clinic, the patients came because of a suspicion of foreign body. The following case is illustrative:

Case 1.—A boy, aged 3 years, after an acute infective suppurative bronchitis, developed an atelectasis of the left lung with limitation of expansion, dulness, and first diminished, then absent, breath sounds. Bronchoscopy revealed a web occluding the left bronchus except for three pinhole apertures through which tiny beads of pus were oozing. Bronchoscopic aspiration of pus, excision of part of the web and dilation (fig 1) restored efficient drainage and ventilation of the left lung. The child has been well for about a year since discharge from the hospital.

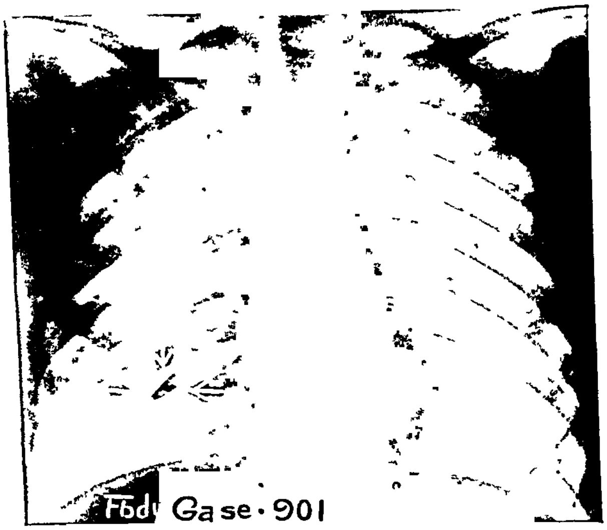

Fig 5 (case 6) —Portion of tonsil forceps inspirated into the lung during tonsillectomy Prompt recovery followed the bronchoscopic removal of the piece of tonsil forceps This case illustrates the value of early diagnosis and prompt bronchoscopic removal of the foreign body in the prophylaxis of chronic lung suppuration Film by Willis F. Manges.

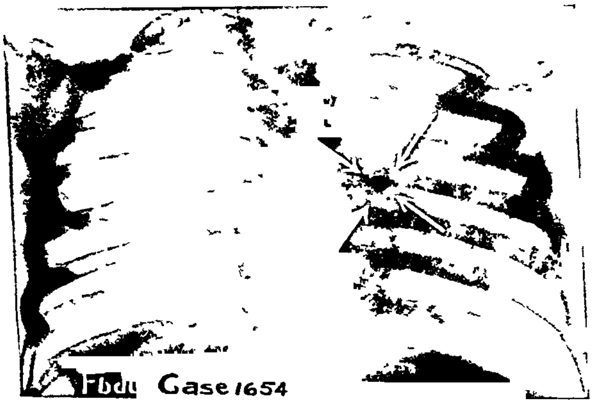

Fig 6 (case 8) —Tooth inspirated into the left lung during tonsillectomy Endobronchial suppuration was well established, but the rapidly developing pulmonary disease was arrested by relatively early diagnosis and peroral bronchoscopic removal Film by Willis F Manges

Cicatricial Bronchial Stenosis.—This is not as common a cause of chronic suppuration in children as in adults; but we have seen four children with this condition, all more than 6 years of age. One was syphilitic, the others were probably tuberculous. Two were improved by treatment, one was unimproved, and one was not brought back for treatment. With proper opportunity, we see no reason why as good results could not be obtained in cases of bronchial stricture in children as we expect to get in adults; but so far the cases encountered in children have been too few to afford a basis for an expression of opinion based on statistics.

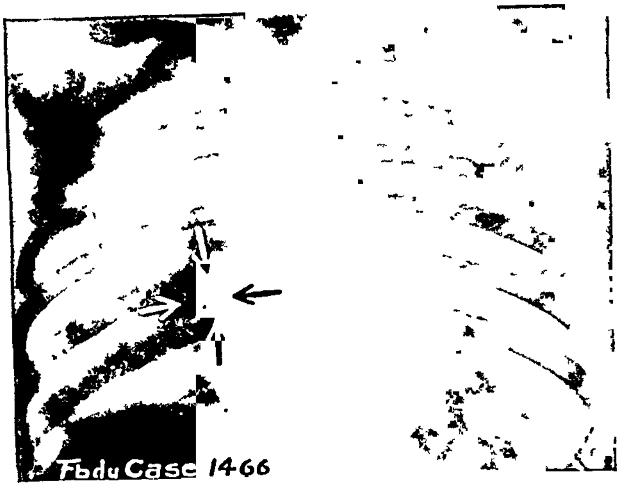

Fig. 7 (case 9).—A diagnosis of chronic lung suppuration secondary to tonsillectomy had been made. The roentgen ray examination revealed a deciduous tooth in the right lung inspirated during tonsillectomy Complete recovery followed bronchoscopic removal of the tooth and the synchronous aspiration of the pus Film by Willis F. Manges.

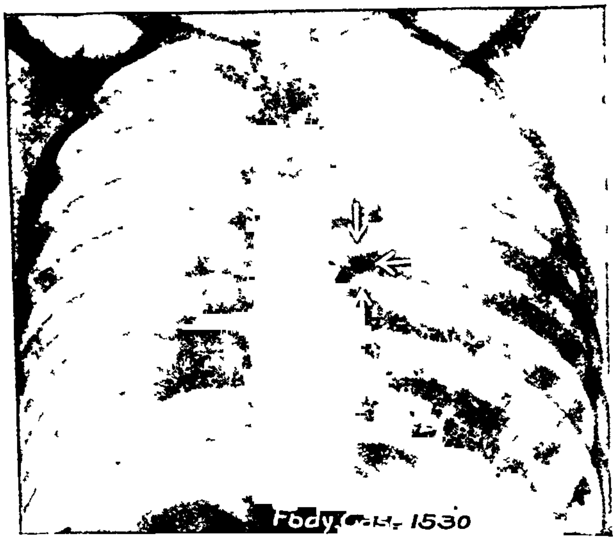

Fig 8 (case 10) —Suppuration involving almost the entire right lung, due to a deciduous tooth inspirated during tonsillectomy Early diagnosis and prompt bronchoscopic removal of the tooth with the synchronous bronchoscopic aspiration of pus resulted in cure of the lung suppuration. Film by W. R Scott

Chronic Pulmonary Suppuration Due to Bronchial Foreign Body.—It is obvious to all practitioners, as an abstract subject, that a foreign body in the bronchi can cause suppuration of the lung; but it is a sad clinical fact that a child may have lung suppuration and may be treated by a succession of able practitioners from childhood through adolescence, adult life, and on to middle age without foreign body being seriously considered as a diagnostic possibility. Over and over again has a child after months or years of chronic suppuration been found to have a foreign body, the bronchoscopic removal of which will cure the suppuration. More than 200 cases of overlooked foreign body, over half the instances occurring during the childhood of the patient, have come to the clinic. A summary of the cases was presented at a recent meeting of the British Medical Association,[3] and recently additional cases have been reported. These cases of prolonged suppuration, say from 6 months to 40 years, are practically all cases of metallic foreign body. Vegetal substances, if not removed, are too quickly fatal to be found as causes of very prolonged suppuration.[4] There are more than two hundred cases at our bronchoscopic clinics that show the necessity of teaching medical students to exclude foreign body in every case of acute or chronic pulmonary disease. The cases have been reported.[5] One recent overlooked case will serve as a typical example of how a child with a foreign body in its lung can be taken to one physician after another, each in succession apparently oblivious of the fact that a foreign body can cause chronic lung suppuration.

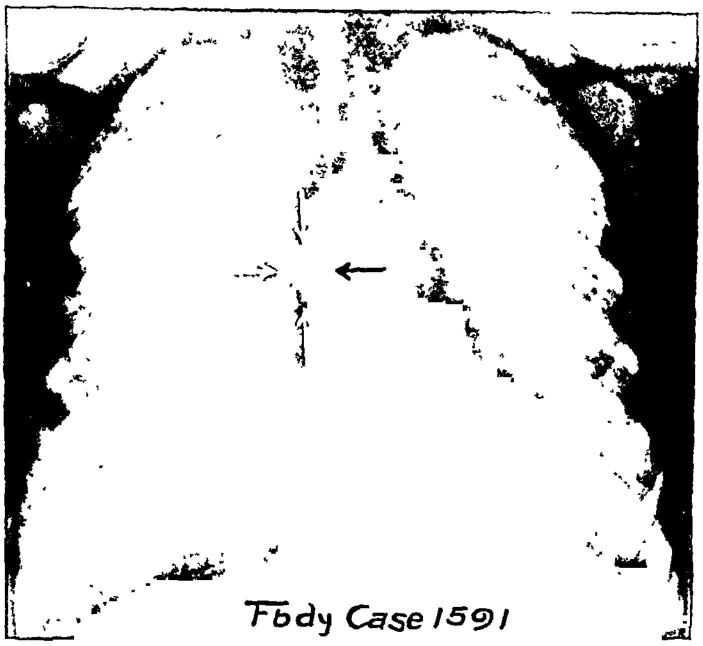

Fig. 9 (case 11).—Tooth inspirated during tonsillectomy. Early diagnosis and prompt bronchoscopic removal with coincident aspiration of infective secretions demonstrated the prophylactic value of these means. Film by H. K. Pancoast.

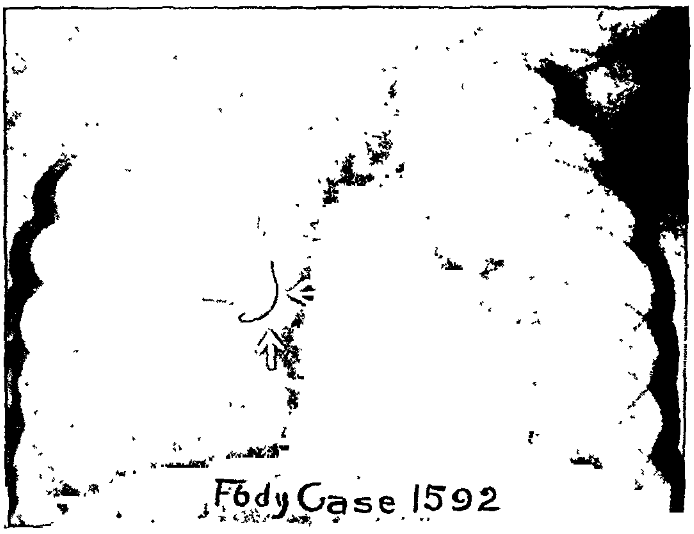

Fig. 10 (case 13).—Tonsil snare wire inspirated during tonsillectomy. Early diagnosis and prompt bronchoscopic removal forestalled chronic pulmonary suppuration. The shadow of the wire was retouched for reproduction. Film by E. P. Pendergrass.

Case 2.—A girl, more than 4 years of age, had had fever, a loose cough, wheezing, foul breath, dyspnea and general ill health since the age of 18 months. The first physician made a diagnosis of asthma; the second physician, a diagnosis of asthmatic bronchitis; the third physician said that the child had tuberculosis; the fourth sent the child to the mountains for climatic treatment (with improvement). The mother then insisted on a roentgen-ray examination and took the child for this purpose to Dr. H. M. Stewart, who found the shadow of a staple in the lung (fig. 2). Peroral bronchoscopic removal was followed by complete recovery.

In addition to illustrating the fact that foreign body does not seem to occur to physicians as a cause of lung suppuration, this case affords evidence of a barrier, structural or physiologic, against pyogenic invasion by the endobronchial route. The resistance to the suppurative process, and the prompt recovery after removal of the foreign body, is without parallel in suppuration of three years' standing following influenza or lobar pneumonia.[4]

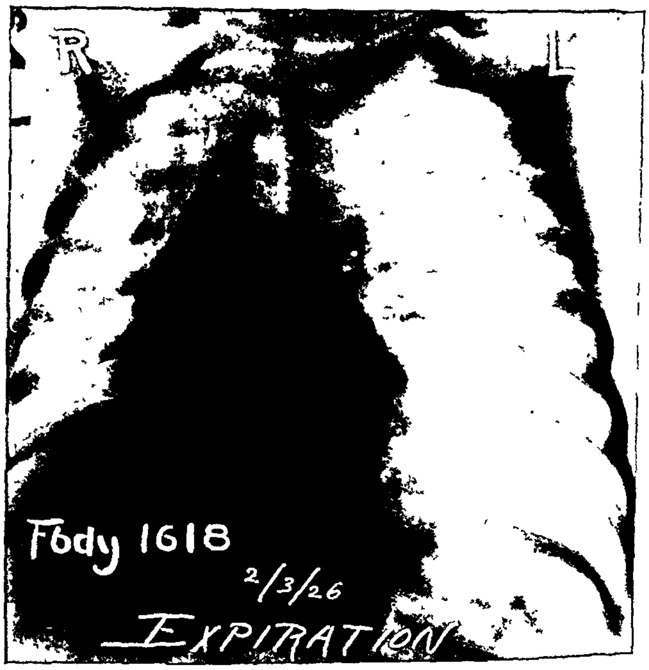

Fig. 11 (case 14).—Atelectasis and infectious disease of the right lower lobe secondary to inspiration of a tonsil swab. After bronchoscopic removal of the swab, many bronchoscopic aspirations were required before the lung fully recovered from the suppurative process. Film by Willis F. Manges.

Esophageal Foreign Body as a Cause of Chronic Pulmonary Suppuration.—It is obvious that a foreign body inspirated into the bronchi can cause lung suppuration; but it is not so generally realized that a foreign body lodged in the esophagus can cause serious and even fatal suppurative disease of the lungs. Forty-eight cases of serious degrees of the chronic forms of suppuration due to overlooked foreign body in the esophagus have come to the clinic, two of them too late to save life. In the earlier stages the lung suppuration is secondary to inspirated overflow reaching the larynx because it cannot get down past the foreign body obstruction in the esophagus; later the suppuration may be secondary to ulceration through into the trachea or bronchus.

Esophageal Stenosis as a Cause of Chronic Lung Suppuration.—The fact that almost all patients with esophageal stenosis develop pulmonary complications does not seem to be generally realized. At the bronchoscopic clinic, where we see so many cases of lye burns of the esophagus in children, we have come to dread the lung complication more than the esophageal lesion. In the chronic cicatricial cases it is responsible for what little mortality we have.

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[3] Jackson, Chevalier: Overlooked Cases of Foreign Body in the Air and Food Passages, Brit. M. J **2**: 686 (Oct. 17) 1925.

[4] Jackson, Chevalier: Arachidic and Other Forms of Vegetal Bronchitis, Atlantic M. J. **28**: 506 (May) 1925

[5] Jackson, Chevalier: Suppurative Diseases of the Lung Due to Inspirated Foreign Body Contrasted with Those of Other Etiology, Surg. Gynec. Obst. **42**: 305 (March) 1926.

Post-Tonsillectomic Suppuration.—A relatively large number of these cases coming to the bronchoscopic clinic has afforded very interesting data bearing on etiology, prophylaxis and treatment.

Brief mention of a few of these cases follows:

CASE 5.—A boy, aged 6 years, while etherized for tonsillectomy, inspirated a small lamp that became detached from the self-illuminated Whitehead mouth gag. When admitted, three days after the accident, there was complete atelectasis of the right lung. This disappeared, and the temperature, which had risen to 103 F., came to normal within forty-eight hours after the peroral bronchoscopic removal of the lamp from the right main bronchus (fig. 4).

CASE 6.—A boy, aged 7 years, during tonsillectomy inspirated a catch that broke off the tonsil grasping forceps. Bronchoscopic removal eighteen days later was followed by perfect recovery (fig. 5).

CASE 7.—A boy developed a cough within a few days after an abdominal operation under general anesthesia over a year prior to admission. On the fourteenth day after operation, large quantities of foul sputum were expectorated. While under treatment for a supposed pulmonary tuberculosis with abscess formation, a roentgen-ray examination showed not only an abscess but an incisor dental brace that had disappeared at operation sixteen months before. Peroral bronchoscopic removal was followed within a few months by complete recovery.

CASE 8.—A boy, aged 8 years, developed cough, expectoration and fever, beginning two days after tonsillectomy, at which deciduous teeth were extracted, ether anesthesia being used. Physical signs elicited by Dr. McCrae and roentgen-ray examination by Dr. Willis F. Manges showed atelectasis of the left lung, which was filling with pus. The roentgenogram revealed also the shadow of a tooth in the left bronchus. At bronchoscopic removal of the tooth by Dr. Louis H. Clerf, the left bronchus was found filled with foul pus. Complete recovery followed promptly without a second aspiration of the pus being necessary. The tooth had evidently been inspirated during tonsillectomy (fig. 6).

CASE 9.—A girl, aged 8 years, had cough, fever, weight loss and general malaise after tonsillectomy. Roentgen-ray examination showed a tooth in the right lung, with a large purulent collection distal to it. A deciduous tooth had been noted as missing after the tonsillectomy. Complete recovery followed peroral bronchoscopic removal of the tooth by Dr. Gabriel Tucker, and the synchronous bronchoscopic aspiration of the pus. No subsequent aspirations were necessary (fig. 7).

CASE 10.—A boy, aged 10 years, immediately after tonsillectomy had cough, foul expectoration, fever, prostration, and pain in the right chest. Roentgen-ray examination a month later showed a suppurative focus in the right lung distal to a shadow believed by Dr. Scott to be a tooth. Breath sounds were absent and the percussion note was impaired over the right lower lobe. After peroral bronchoscopic removal of a tooth from the right lower lobe bronchus by Dr. Louis H. Clerf, the patient made a complete recovery. No aspirations other than the one incidental to the removal of the tooth was necessary. The tooth had, obviously, been inspirated at tonsillectomy (fig. 8).

CASE 11.—A boy, aged 11 years, following tonsillectomy had cough, fever and general ill health. Dr. O. H. P. Pepper noted an asthmatoid wheeze, also diminished breath sounds and impaired percussion note on the right side, with displacement of the heart toward the right side. Roentgen-ray examination by Dr. H. K. Pancoast confirmed the displacement of the heart and revealed a tooth in the right bronchus. Perfect recovery followed peroral bronchoscopic removal by Dr. Gabriel Tucker of the tooth that had been inspirated during tonsillectomy. No subsequent aspirations were necessary (fig. 9).

CASE 12.—A few days after tonsillectomy, symptoms of asthmatic bronchitis developed, and they increased in severity for three months, when a roentgen-ray examination revealed a gold brace in the right bronchus. It had been missed after the tonsillectomy and had evidently been detached by the mouth gag. Complete recovery followed bronchoscopic removal by Dr. Louis H. Clerf. The patient did not have asthma but a typical asthmatoid wheeze that is diagnostic of foreign body; it was heard at the open mouth.

CASE 13.—During tonsillectomy on a boy, aged 12 years, the tonsil-snare wire broke and half the loop disappeared in the secretions. Inspection of the chest by Dr. T. Grier Miller, three hours later, showed limitation of expansion over the right side, most marked over the lower lobe; other physical signs were recorded negatively. Roentgen-ray examination showed the piece of snare wire, about 2.5 cm. long, in the right lower lobe bronchus. Peroral bronchoscopic removal may be said to have been followed by perfect recovery; but as a matter of fact there was nothing from which to recover so far as the bronchi were concerned. The tonsillar wounds healed normally. The expansion became equal after the removal of the wire. The limitation in case of nonobstructive foreign body, such as this bit of wire, is the very valuable McCrae sign of foreign body (fig. 10).

CASE 14.—A girl, aged 21 months, had acute tonsillitis and laryngotracheobronchitis. The father, a physician, was taking a specimen of secretion from the tonsils when the wooden applicator broke and the child inspirated the cotton-wrapped end of the stick. Roentgen-ray examination by the father showed massive collapse of the right lung. When the child was admitted she was extremely ill with fever, dyspnea, cyanosis, loose cough and very foul breath. Physical examination by Drs. Thomas McCrae and Elmer H. Funk revealed signs of a suppurative process in the right lung, with atelectasis of the right lower lobe. Roentgen-ray examination by Dr. Willis F. Manges showed atelectasis and evidence of a suppurative process in the right lung. Bronchoscopy by Dr. Gabriel Tucker revealed an intense suppurative process; the trachea contained foul, thick pus. After this was bronchoscopically aspirated, the cotton swab was seen and removed by grasping the stump of the stick. The child slowly improved, but repeated aspirations were necessary to remove the thick foul pus, which could not be expelled by the very ill and feeble child. About six weeks was required for complete recovery (fig. 11).

CASE 15.—After removal of the tonsils, one of the fossae was packed with a gauze sponge to prevent oozing while an operation on the patient's nose was being done. The sponge loosened and was inspirated into the left bornchus, whence it was bronchoscopically removed by Dr. Gabriel Tucker, who was called in while the patient was still on the operating table. No pulmonary symptoms or signs developed after removal of the foreign body.

The twelve cases of foreign bodies inspirated from the region of operation during tonsillectomy, cited in the foregoing, prove conclusively that foreign bodies necessarily besmeared with clots and infective agents can go direct from the tonsillar fossa to the lungs during tonsillectomy under local as well as under general anesthesia; and the number of cases justifies the inference that inspiration of clots and secretion must occur during a large proportion of tonsillectomies, probably without symptoms in many cases. This confirms the views of Charles W. Richardson, who first drew attention to this complication of tonsillectomy.[8] The recovery of all the patients after removal of the foreign body, and the incidental aspiration of the necessarily infected secretion, would seem to indicate that bronchoscopy is an ideal method of treatment in cases of inspirated infections complicating operations. So many cases of chronic suppurative diseases of the lung originate in an acute process occurring as a sequel of tonsillectomy that close watching for pulmonary complications during the first four weeks after tonsillectomy becomes an imperative measure in the prophylaxis of chronic suppurative disease; because early bronchoscopic aspiration will cure most cases of the acute condition. The cases also confirm the previous observation of a barrier, structural or physiologic, against invasion of the lung by the endobronchial route.[9] The recovery in these cases tends to confirm the view of Fetterolf and Fox [10] as to the embolic channel in the etiology of some of the cases of post-tonsillectomic pulmonary abscess.

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[8] Richardson, C. W.: Abscess of the Lung Following Operation on the Tonsils and Upper Air Tract, Laryngoscope 26: 1001 (July) 1916.

DIAGNOSIS

Bronchoscopy is sometimes required to determine the mere presence or absence of suppuration in pulmonary disease; but for the purpose of differential diagnosis between chronic bronchitis, abscess, bronchiectasis, spirochetosis, neoplasms, bronchial stenosis (fig. 1) and other conditions, the bronchoscope is absolutely invaluable, and in many cases is the only means by which a positive diagnosis can be made. It has been noted in all regions of the body now locally examined that inferential diagnosis was satisfactory until methods of local examination demonstrated that the satisfaction was a matter of misplaced confidence and that the diagnosis had generally been wrong. In other words, local examination has revolutionized diagnosis and treatment. Bronchoscopy has done this in the matter of foreign bodies and is doing it in respect of other conditions. An accurate diagnosis as to the exact location and especially as to the character of the lesion is fundamental in any scientific method of treatment of any disease. These local conditions can be determined with great accuracy and with all the certainty of direct inspection.

Specimens of Secretions.—Sputum is unobtainable or is obtained with difficulty in very young children. Even when obtained, it is so contaminated with oral secretions as to render untrustworthy any investigations or any vaccines prepared from it. On the contrary, when secretions are obtained bronchoscopically they are not only uncontaminated but they are taken with great precision from the lesion itself.[7]

Pneumography.—The bronchoscopic insufflation if bismuth subcarbonate [11] will render any part of the tracheobronchial tree opaque to the ray. In some cases it is preferable to use, by bronchoscopic instillation, a few centimeters of lipiodol, a form of opaque iodized oil recently discovered by our French colleagues.[12] We concur in the opinion of Ballon [13] in his preference for bronchoscopic methods rather than subglottic methods in the introduction of lipiodol.

Bronchoscopic Appearances in Chronic Suppuration.—The bronchoscopic views in the interior of a suppurating lung are exceedingly interesting; but extensive consideration of them here would be out of place. They have been published and illustrated in colors.[14]

Asthma.—Though asthma, in the present state of our knowledge, can scarcely be classed as an infectious disease, yet it deserves inclusion here not only because of the complicating secondary infections and the stagnation so efficiently treated with the bronchoscope by Moore,[13] but also because of the fact that thirty-seven children whose symptoms were entirely due to a foreign body and its secondary suppuration have come to the clinic after the diagnosis of bronchial asthma had been made by practitioners elsewhere. In one case four, in another case five, excellent practitioners had concurred in the erroneous diagnosis (case 2). Moreover, the foreign bodies were, in six of the thirty-seven cases, in the esophagus and not in the lower air passages.

On the authority of McCrae, Stengel, Edward E. Graham, Fife, Carpenter, Gittings, Price, Sinclair, Funk, Tyson, Engel, Boyce and other pediatricians and internists with whom we have worked, we feel justified in stating that the diagnosis of asthma should not be made in a child without excluding foreign body as a diagnostic possibility, by every means at our command.

Contraindications to Bronchoscopy.—1. When, in any case of lung suppuration not due to foreign body, the pediatrician, the surgeon and the roentgenologist agree that external surgery is indicated.

2. In case of a patient moribund from conditions other than obstruction to the airway.

3. In cases of lung suppuration due to causes other than foreign body, and in which rupture into the pleura is imminent. Bronchoscopy is contraindicated here not because it would hasten rupture but because it would be powerless to prevent it. In foreign body cases, on the contrary, rupture into the pleura can practically always be prevented if the foreign body is removed. If rupture into the pleura has occurred, the pleura should be drained externally, but the foreign body, which always remains fixed in the bronchus, should be removed through the mouth, rather than by external exploration. This has been the opinion of all surgeons with whom we have worked.

4. Diffuse suppurative pneumonitis with the rapid breaking down of lung-tissue. This is a contraindication to bronchoscopy when the condition is not due to foreign body. On the contrary, when due to foreign body immediate bronchoscopic removal of the foreign body will promptly stop the whole process and is the best means for prophylaxis of chronic suppuration. Over and over again bronchoscopists are asked, "Would it not be better to wait until the 'pneumonia' is over before bronchoscopically removing the foreign body?" The answer is emphatically "No," and it is necessary to add that the signs of the supposed pneumonia will promptly disappear after the removal of the foreign body.[3]

5. As pointed out by Joseph S. Wall, all manipulations in babies must be gentle. Lack of training, organization and an adequate armamentarium is an absolute contraindication to bronchoscopy in very young children.

PROPHYLAXIS

Deductions from the foregoing data form an excellent basis for prophylaxis.

Since stagnation of pus in subacute suppuration is one of the most important factors in the causation of chronic suppuration, it cannot be too strongly emphasized that an acute suppurative process should not be allowed to drift into the chronic form. When favorable progress ceases or lags, bronchoscopic aspiration should be added to, but not substituted for, the general measures the pediatrician is employing.

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[9] Jackson (*footnotes 5 and 6*).

[10] Fetterolf, George; and Fox, Herbert: The Paratonsillar Tissues in Relation to Posttonsillectomy Abscess, Proc. Am. Laryngol. A., 1923.

[11] Jackson, Chevalier: The Bronchial Tree: Its Study in the Living by Insufflation of Opaque Substances, Am. J. Roentgenol. **5**: 454 (Oct.) 1918.

[12] Lemaitre, Fernand: Les corps étrangers de la trachée et des bronches, J. méd. franç. **13**: 16-21 (Jan.) 1924. Sicard, J. A., and Forestier, J.: Bull. et mém. Soc. méd. d. hôp. de Paris **46**: 463 (March 17) 1922. Clerf, L.: Pneumonography, Surg. Gynec. Obst. **41**: 722 (Dec.) 1925.

[13] Ballon, D. H.: The Injection of Lipiodol as an Aid in the X-Ray Diagnosis of Bronchopulmonary Diseases, Canad. M. A. J. **15**: 995 (Oct.) 1925.

[14] Jackson, Chevalier: Peroral Endoscopy and Laryngeal Surgery, St. Louis, Laryngoscope Publishing Company, 1914; Bronchoscopy and Esophagoscopy, Philadelphia, W. B. Saunders Company, 1926; Mechanism of Physical Signs; Bronchoscopy as an Aid to the Thoracic Surgeon, J. A. M. A. **84**: 97 (Jan. 10) 1925.

Post-Tonsillectomic Lung Suppuration.—The best means for prevention of chronic suppuration in these cases, as stated by Willy Meyer[16] and others,[17] is prompt bronchoscopic aspiration. In many cases, in the hands of so many different bronchoscopists as to exclude mere coincidence, bronchoscopic aspiration has acted like magic in arresting the process. Charles W. Richardson, who first brought this form of abscess to the attention of the profession, goes a step further in prophylaxis and advocates avoidance of inspiration of infective materials at operation.[18]

Foreign Body Cases.—Chronic infectious disease of the lung can be prevented in close to 100 per cent of these cases by bronchoscopic removal of the foreign body, if the diagnosis is made sufficiently early. Hence the great importance of teaching every medical student to exclude foreign body in every case of acute as well as chronic disease of the chest.[3]

TREATMENT

Foreign Body Cases.—In case of inspirated foreign body in the lung, it may be taken as axiomatic that no treatment other than bronchoscopic removal is worthy of a moment's consideration.

In the overlooked cases, in which a foreign body has been present for many years and which is consequently associated with chronic suppuration, it is necessary to remember that this class of suppurative cases is widely different from the class of cases due to other causes. Some of the reasons for this difference are obvious; others are obscure. Stated broadly, the outstanding difference is that a long-standing, chronic, infective, suppurative process due to foreign body will promptly clear up without subsequent treatment after a single bronchoscopy at which the foreign body is removed;[5] whereas a grossly similar process due to causes other than foreign body will require months of bronchoscopic aspiration for cure, or may prove incurable by this or any other means. The progress of foreign body cases after bronchoscopic removal indicates the existence of a barrier, structural or physiologic, against the invasion of the parenchyma of the lung by the bronchial route.[5] Be this as it may, the clinical fact remains that even after many years of suppuration, if due to foreign body, no treatment is required except the removal of the foreign body. An outdoor rest regimen is worth while; but even this does not seem to be essential. It may be stated as axiomatic that in case of inspirated foreign body in the lung no treatment other than peroral bronchoscopic removal is worthy of a moment's consideration.

Pulmonary Abscess.—As noted by Dr. McCrae, bronchoscopic aspiration is available only after drainage into a bronchus has occurred. It is mechanically easy with fluoroscopic guidance to penetrate any peribronchial purulent collection localizable, but the advisability of doing so is questionable. Bronchi and fistulous tracts communicating with purulent accumulations can be gently entered with the aspirating tube, and the stagnant pus removed with safety and almost always with benefit. The fundamental indication is to prevent stagnation by frequent aspiration. Cough and ciliary action are inefficient in all chronic cases; that is why they are chronic.

Bronchiectasis.—Perhaps the best guide here is the opinion of Dr. Thomas McCrae, who has, from the broadest point of view of internal medicine, seen so much of bronchoscopy. He states in effect that "bronchoscopy is of great value in the treatment of bronchiectasis if used early; but *early* should be stressed. This means prompt diagnosis, which is very rarely done. We may be able to prevent advanced bronchiectasis by early recognition and prompt bronchoscopic treatment."[18]

Bronchoscopic Aspiration.—This can be carried out by bronchoscopy through the mouth in a few minutes without any anesthetic, general or local. A sedative may be used or not, as preferred. The bronchoscope has an aspirating canal in the wall of the tube; but more often, in children, especially, the independent aspirating tube is preferred. Often both are used. The independent tube can be inserted into small bronchi and fistulas, even at the periphery of the lung if necessary. Bronchoscopic aspiration is of great aid in the treatment of all forms of lung suppuration.[19]

As expressing the views of a pediatrician who has seen much of bronchoscopic aspiration, Ralph M. Tyson[20] may be quoted:

> Frequently a lobar pneumonia occurring in young children leaves a chronic infection in the lobe which was affected. It is usually in the lower lobes, although this is by no means constant. This infection takes the form of a chronic bronchitis with bronchiectasis. Upon mild pulmonary infections, there is a marked tendency toward blocking of drainage from the area involved. These reinfections simulate and are frequently mistaken for recurring pneumonias. If drainage can be secured by proper treatment, preferably by the bronchoscope, the area soon clears, the fever subsides, and the child is apparently as well as ever, with the exception, of course, that the fibrotic changes, already existing, remain.
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> In certain types of acute pulmonary infection, such as influenza and whooping cough, there is defective drainage in one or more parts of the lung, with retained secretions. This may be of such size as to involve the entire lobe and block off all air in that area. The frequent sites are the middle lobe and the right lower lobe. If the stem bronchus leading to this area be bronchoscopically wiped free from secretion, these areas rapidly clear up without leaving any signs of chronic infection.

Vaccine Therapy.—Vaccines obtained from sputum often have little value because of contamination of the specimen. Uncontaminated specimens can be obtained directly from the lesion, by bronchoscopy, in a few minutes, without any anesthetic, general or local. The patient may thus get all the benefit possible from vaccine methods of treatment.

CONCLUSIONS

The indications for bronchoscopy in the treatment of chronic pulmonary suppuration may be thus summarized:

1. In chronic pulmonary abscess, bronchoscopic aspiration is indicated to prevent stagnation. In all chronic cases, natural drainage by cough and ciliary action is inefficient; that is why these cases have become chronic. Bronchoscopic aspiration would have been prophylactic.

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[16] Meyer, Willy: Observations on Lung Suppuration and Its Treatment, Arch. Surg. 5:361 (Jan.) 1923.

[17] Myerson, M. C.: Bronchoscopic Observations on the Cough Reflex in Tonsillectomy Under General Anesthesia, Laryngoscope 34:63 (Jan.) 1924. Jackson (footnote 7).

[18] McCrae, Thomas: Personal communication to the author; Clinical Features of Foreign Bodies in the Bronchi, Lumleian Lectures Before the Royal College of Physicians of London, Lancet 1:735 (April 12), 787 (April 19), 838 (April 26) 1924.

[19] Martin, G E.: Application of the Bronchoscope in the Diagnosis and Treatment of Certain Affections of the Chest, Edinburgh M. J., June, 1924.

[20] Tyson, R. M.: Personal communication to the author.

2. In cases of pulmonary abscess of other than foreign body origin and in which the pediatrician, the surgeon and the roentgenologist deem external drainage advisable, bronchoscopic drainage is not indicated. Sometimes, after a thoracotomy, the surgeon has called on his bronchoscopic assistant to restore bronchial communication for ventilation and natural upward drainage of secretions from an isolated sealed up area of lung; and in other cases to treat residual suppuration areas.

3. Many cases of chronic lung suppuration in children have resulted from mistaking the asthmatoid wheeze of foreign body for bronchial asthma.

4. In bronchiectasis, as Dr. McCrae has said, "bronchoscopy is of value when used early; but *early* must be stressed. This means early diagnosis, which is very rarely done. We may be able to prevent advanced bronchiectasis by early recognition and prompt bronchoscopic treatment."

5. In every case of pulmonary suppuration, foreign body should be excluded. It is just as important in a case of lung suppuration to exclude foreign body in the esophagus as in the air passages. These two facts should be deeply impressed on the medical student. When a foreign body is present, peroral bronchoscopic removal is the only method of treatment worthy of a moment's consideration.

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CHRONIC, NONSPECIFIC INFECTIONS OF THE LUNGS AND BRONCHI

GENERAL INTRODUCTION AND DIAGNOSIS *

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Chronic, nonspecific, that is, nontuberculous, infections of the lungs and bronchi are far more common in early life than is generally appreciated. Physicians are likely to forget that there are such conditions and to think, therefore, that all chronic pulmonary conditions in infancy and childhood are tuberculous in origin. If these nontuberculous conditions are kept in mind and due attention is paid to the history of their development, their symptomatology and their physical signs, it is usually easy to distinguish them from those due to tuberculosis.

CHRONIC BRONCHITIS

Chronic bronchitis may be one of the results of chronic lesions of the cardiac orifices. It may also be a complication of bronchiectasis and chronic interstitial pneumonia and, occasionally, of pulmonary tuberculosis. In most instances, however, it is the result of repeated attacks of acute bronchitis. It is especially likely to develop in debilitated and malnourished children who live in unhygienic surroundings. It is often a complication of rickets, presumably partly because of the deformity of the chest in this disease, partly because of the lowered nutrition, and partly because of the recurrent attacks of acute bronchitis which are so common in rickets. It may be associated with asthma. This association is, however, much less common in childhood than in later life and, when it occurs, the bronchitis is usually not of a very severe type. The pathologic changes in chronic bronchitis in early life are usually slight, there seldom being development of marked changes, such as atrophy and ulceration. In the more marked cases there may be a moderate amount of emphysema, but severe emphysema is very unusual. In rickets, however, when the chest is deformed, limited areas of emphysema are not uncommon. In infancy and childhood, when emphysema develops, it is most often in the upper anterior portions of the lungs. Enlargement of the tracheobronchial lymph nodes is not uncommon.

The chief symptom of chronic bronchitis is cough. This may be hardly noticeable, however, except during acute exacerbations. It is more troublesome at night and in the early morning, and is worse in the winter than in the summer. There is, as a rule, nothing characteristic about it, but it sometimes occurs in paroxysms which resemble those of whooping cough. It is possible that the paroxysmal cough may be due to irritation from enlargement of the tracheobronchial lymph nodes. The amount of sputum varies. Bronchorrhea is most unusual. The sputum may be composed of mucus or be either mucopurulent or purulent. The expectoration is almost never foul, however, as it so often is in adults. If it is, there is almost always an associated bronchiectasis.

Children with chronic bronchitis are usually thin and somewhat pale, but do not, as a rule, look or act seriously ill. The general health is, in most instances, but little affected. They are quite likely to be a little short of breath on exertion. The temperature is usually normal, except in acute exacerbations.

There are very few physical signs. Babies are quite likely, however, to show some enlargement of the upper portion of the chest in front, with some hyperresonance on percussion, as the result of a moderate amount of emphysema. In older children there is rarely enough emphysema to give any physical signs. If there is, the signs are the same as those of emphysema in later life. Râles can usually be heard, but not infrequently are absent for a time. They may be either moist or dry, according to the character of the secretion, and may be of any size. There are, of course, no changes in the vocal resonance or tactile fremitus. The percussion note is not changed, unless there is considerable secondary emphysema.

Chronic bronchitis is not infrequently mistaken for pulmonary tuberculosis. In chronic bronchitis the physical signs are those of bronchitis, to which may be added those of mild emphysema. There are never any signs of solidification. In pulmonary tuberculosis there are always some signs of solidification, and the signs of bronchitis are usually localized, not general. The temperature is more often elevated in tuberculosis and usually ranges higher than in bronchitis. The roentgen ray shows signs of solidification in tuberculosis, but nothing, or nothing more than peribronchitis, in chronic bronchitis. There are likely to be evidences of tracheobronchial adenitis in both, both on physical examination and with the roentgen ray. These evidences are of no value, however, in diagnosis, because they may be present in both. A negative tuberculin test is strong evidence against tuberculosis. A positive test does not prove, however, that the pulmonary trouble is tuberculous, because the positive reaction may as well be due to some small tuberculous focus elsewhere in the body.

Chronic bronchitis in babies and young children is likely to be associated during acute exacerbations with asthmatic manifestations. These manifestations are probably due to secondary spasm of the bronchi rather than to swelling of the bronchial mucous membrane. It is difficult to explain why they occur in one instance and not in another. These symptoms may persist for a time after the acute exacerbation of the bronchitis has passed. There is nothing characteristic about these asthmatic symptoms. Their presence, however, is strong evidence against the underlying condition being tuberculous.

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BRONCHIECTASIS

Congenital bronchiectasis is a pathologic curiosity. I have never seen a case. It is almost always limited to one lung or to one lobe of one lung and is, therefore, compatible with life, even for a long time. If it were not so limited, death would occur early. There are usually no symptoms from it. The physical signs are the same as those of other types of bronchiectasis.

All the varieties of bronchiectasis, cylindric, sacculated and spindle-shaped, may develop in children as in adults, according to the cause. The pathologic process may be localized or general. Bronchiectasis seldom results from peribronchitis in chronic bronchitis in childhood. If it does, it is almost always present in both lungs. It sometimes develops as the result of peribronchitis in bronchopneumonia. If so, it may be present in either one or both lungs. Localized cylindric or sacculated bronchiectasis may result from local obstruction in one of the larger bronchi as a result of partial obstruction from a foreign body or the pressure of an enlarged gland on the outside of the bronchus. In such instances the gland is usually tuberculous. The most common cause of bronchiectasis in childhood, however, is chronic interstitial pneumonia. In such cases, of course, the process is limited to one lung. It may be localized or general; cylindric or sacculated, but more often sacculated. Bronchiectasis is seldom due to tuberculosis of the lungs in early life. The pathologic changes are the same as in later life, but usually less marked.

The symptoms in chronic, generalized, cylindric bronchiectasis are the same as in chronic bronchitis, except that the amount of sputum is likely to be larger. If there are large, sacculated bronchiectases, considerable amounts of sputum may be coughed up at intervals. It may be foul, putrid or gangrenous. Cases of this sort are, however, much less common in childhood than in adult life. The physical signs in bronchiectasis are the same as in chronic bronchitis, except when there are large, sacculated bronchiectases. In such cases the signs are those of cavities which at times are full and at others empty. Even in fairly marked cases the physical signs of bronchiectasis may be disguised by those of an associated emphysema.

Bronchiectasis should be suspected when, in the course of chronic bronchitis, the sputum is more abundant and more foul than is usually the case. It is almost certainly present when the signs of cavities develop in chronic interstitial pneumonia. It is often very difficult to distinguish between a large bronchiectasis and an abscess of the lung. In general, however, the onset of an abscess is more acute and the signs come on quickly after an operation for the removal of tonsils and adenoids, pneumonia or empyema, or the inhalation of a foreign body. A bronchiectasis may, however, be due to the inhalation of a foreign body. If the difficulty develops after pneumonia and the process in the lung is localized, an abscess is the more probable. If the whole lung is involved, there is more likely to be a bronchiectasis. If the pneumonia was influenzal in origin, bronchiectasis is more common than abscess. The roentgen ray is not of great assistance in distinguishing between chronic bronchitis and a general cylindric bronchiectasis, unless the dilatation of the bronchi is greater than it usually is in early life. It reveals cavities, however, which cannot be discovered by physical examination, and in bronchiectasis secondary to chronic interstitial pneumonia shows a most characteristic picture. Bronchiectatic cavities which are not at all distinct under ordinary conditions often show very plainly after the injection of lipiodol. It does not tell, however, whether a cavity is due to an abscess or to a bronchiectasis. The value of the tuberculin test is the same as in chronic bronchitis. The examination of the sputum is of greater value, as tubercle bacilli are almost always present in the sputum when cavities are due to tuberculosis. The temperature range is of no importance in the differential diagnosis, nor is the white count, because it is elevated in both conditions.

CHRONIC BRONCHOPNEUMONIA

Chronic bronchopneumonia practically never occurs in childhood, unless it is tuberculous in origin. In infancy, however, it is probably somewhat more common. Even then, however, the condition is subacute rather than chronic. The nearest approach to a chronic bronchopneumonia occurs in rachitic infants with marked deformity of the chest, softening of the chest wall and weakening of the respiratory muscles. In such infants it is not uncommon to find a strip of dulness in the back on each side of the median line. In this area of dulness, respiration is usually diminished in intensity and bronchovesicular or bronchial in character. The voice sounds vary with the respiration. The tactile fremitus is usually somewhat increased, and numerous moist râles of various sizes are present. Pathologically, the lungs, in these cases, show a mixture of bronchopneumonia, atelectasis and emphysema. The roentgen ray shows merely evidences of complete or partial solidification. There is usually an irregular elevation of the temperature. It may, however, be normal. The other symptoms are cough and slight dyspnea.

Such cases are almost invariably supposed to be tuberculosis. Tuberculosis of the lungs at this period of life, however, almost never has this distribution. The occurrence of these physical signs in marked rickets with deformity of the chest is, moreover, almost pathognomonic. The value of the tuberculin test is, as always in such cases, important if negative, much less important if positive. The roentgen ray is of no assistance in the diagnosis, nor is the white count. It is always elevated.

Subacute bronchopneumonia persisting for weeks and sometimes for several months does occur in infancy. When the disease lasts more than a few weeks, however, the chances are that it is tuberculous. It is very difficult to distinguish between subacute and chronic tuberculous and nontuberculous bronchopneumonia at this age. In a general way, the temperature is more irregular in tuberculous than in nontuberculous bronchopneumonia. Babies with tuberculous bronchopneumonia do not seem as sick in comparison with the amount of physical signs as they do in nontuberculous bronchopneumonia. They are likely to be brighter and to take more interest in their surroundings. The onset in tuberculous bronchopneumonia is usually rather slower than in nontuberculous and less likely to follow bronchitis. The areas of consolidation vary from time to time in nontuberculous bronchopneumonia, clearing up in one place and developing in another, while in tuberculous bronchopneumonia an area never clears, but constantly increases in size. Evidences of enlargement of the tracheobronchial lymph nodes are present in both. The roentgen ray simply shows areas of consolidation in both and is of no aid in diagnosis. The value of the tuberculin test is the same as in other pulmonary conditions in infancy—very important if negative, of much less importance if positive. The white count is elevated in both tuberculous and nontuberculous bronchopneumonia and is, therefore, of no value. Tubercle bacilli may be present in the bronchial secretions in tuberculous bronchopneumonia. They are, of course, absent in nontuberculous bronchopneumonia. It is very difficult, however, to get the sputum in infancy.

CHRONIC INTERSTITIAL PNEUMONIA

Sometimes after lobar pneumonia the lung does not clear up and the fibrinous plugs in the alveoli become organized. There is an overgrowth of connective tissue in the alveolar walls, in and about the bronchi, and in the framework of the lungs. The same process finally extends to the pleura. In other instances it may start in the pleura from a pleurisy and extend inward. The pathologic process also not infrequently extends to the mediastinum and to the pericardium. The newly formed connective tissue gradually contracts and compresses what alveolar tissue has not been already involved. The pull of the fibrous tissue on the pleura and the contraction of the pleura itself reduce the size of the lung and pull in the chest wall. If there are adhesions to the mediastinum and pericardium, the mediastinum and heart are pulled over. The bronchi may or may not be dilated by the pull of the fibrous tissue. If they are, bronchiectasis may develop.

When chronic interstitial pneumonia follows lobar pneumonia, the signs of solidification persist in the lung. The temperature continues to be a little elevated after the crisis. Cough and rapid respiration persist, and the child, although not acutely sick, does not get well. It finally gets up and about, but is short of breath on exertion, coughs more or less, has an irregular fever from time to time, and is frequently a little cyanotic. If bronchiectasis develops, the symptoms of this condition are added to those of the chronic interstitial pneumonia.

After contraction of the newly formed fibrous tissue has taken place, the affected side is smaller than the other and its motility is diminished. There is usually some scoliosis of the spine. The cardiac impulse is displaced toward the affected side or is absent. There is dulness or flatness on the affected side, according to the amount of fibrous change in the lung. The cardiac dulness merges with that of the lung on the affected side, and the opposite border is displaced toward that side. The respiratory sound is diminished in intensity because of the diminished motility of the chest on that side and also because of the thickening of the pleura. The intensity also depends on whether the bronchi are dilated or compressed. Its character varies from bronchial to bronchovesicular, according to the relative amount of fibrous tissue in the lung. If there are bronchiectatic cavities near the surface, it may be amphoric or cavernous. The voice sounds vary in the same way as those of the respiration. The tactile fremitus is usually increased. Râles are often heard because of a complicating bronchitis. They are usually high pitched, because of the solidification of the lung. The sense of resistance is much increased. The other side shows the changes of compensatory emphysema. Unless a secondary bronchiectasis has developed, the roentgen ray shows simply the evidences of consolidation of the lung; that is, no more than can be determined by physical examination. If bronchiectasis has developed, the picture shown by the roentgen ray is the same as in bronchiectasis from other causes, but modified by the presence of the newly formed cicatrical tissue.

Chronic interstitial pneumonia is almost always mistaken for tuberculosis. Tuberculosis, however, almost never develops after lobar pneumonia, and tuberculosis in early life is almost never unilateral. It is not associated with evidences of contraction of the lung, and the mediastinum and heart are never pulled over. It practically never goes on to cavity formation on one side without involvement of the other side. The roentgen ray is of little assistance in diagnosis, because, if tuberculosis of the lung did take this form, it would give the same picture. The temperature is usually higher in tuberculosis and the course more rapid. The sputum in tuberculosis shows tubercle bacilli. In chronic interstitial pneumonia it does not. A negative tuberculin test rules out tuberculosis, and a positive one is of little importance. The white count is useless, because there may or may not be an elevation in either condition.

In other instances, but less often, similar changes may develop throughout both lungs after acute bronchopneumonia or as the result of repeated attacks of acute bronchopneumonia. In these cases the progress of the pathologic process is much slower, and the changes are usually less marked. The symptoms are not much different from those in chronic bronchitis and bronchiectasis. The physical signs are, for a time, much the same, with, in addition, some impairment of the motility of both sides of the chest and of the respiratory sound. In time there is more or less dulness on both sides, usually irregularly distributed. Here and there the dulness may change to flatness. In those areas in which the changes are most marked the respiratory sound varies from bronchovesicular to vesicular, provided these areas are near the surface. If there are bronchiectatic cavities near the surface, the respiration may be amphoric or cavernous. The voice sounds and tactile fremitus vary with the respiration. Râles are almost always present. There is not much increase in the sense of resistance. There is usually no displacement of the mediastinum or heart.

This type also is almost invariably mistaken for tuberculosis. There is more justification for such a mistake in this type than in that which follows lobar pneumonia, because the pathologic progress is bilateral and the physical signs are very similar to those in tuberculosis. In tuberculosis, however, the progress of the disease is usually more rapid and the temperature is higher and more irregular. In childhood, moreover, tuberculosis seldom goes on to cavity formation. The roentgen ray is of little assistance in the diagnosis, because the same pictures may be shown in both tuberculosis and chronic interstitial pneumonia of this type. The importance of the findings in the sputum and of the tuberculin test are the same as in the diagnosis between tuberculosis and chronic interstitial pneumonia following lobar pneumonia.

ABSCESS OF THE LUNG

Abscess of the lung in early life is almost always due to the inhalation of a foreign body and is, therefore, most often situated in the right lower lobe. The objects most commonly inhaled are pieces of tonsils and adenoids. An abscess may also develop as a sequel of lobar pneumonia or as the result of the breaking through of an empyema. In childhood an abscess of the lung is almost never tuberculous. If so, it is usually due to the breaking down of tuberculous tracheobronchial glands.

From two to four weeks usually elapse before the appearance of any symptoms, when an abscess is due to the inhalation of a piece of tonsil or adenoid. The interval may be much longer when it is due to the inhalation of some other foreign body, depending on the character of that body and how much it obstructs the bronchus. The first symptoms in these cases are slight irregular fever and cough. Sometimes there is pain on one side of the chest. The temperature gradually becomes characteristically septic, and the general constitutional symptoms of a purulent focus in the body develop. If the abscess connects with a bronchus, there is a considerable amount of foul purulent sputum, which may be coughed up intermittently. If it does not, there is but little sputum. When an abscess follows pneumonia, the symptoms are the same as in empyema, except that, if the abscess connects with a bronchus, there is much purulent sputum.

The physical signs depend on whether the abscess is open or closed and whether it is near the surface of the lung or not. If it is near the surface and closed, there is localized dulness or flatness, with diminished respiration, voice sounds and tactile fremitus and an increased sense of resistance. If it is located deeply in the lung, the only change is slight dulness on strong percussion. If the abscess is open, that is, connected with a bronchus, and the cavity is full, the physical signs are the same as in the closed form, whether it is near the surface or deep in the lung. When it is empty and near the surface, the percussion note is some modification of tympanitic, according to whether there is solidified or normal lung about it. If it is deep in, the tympanitic note is fainter or absent. If it is near the surface, the respiratory sound is loud and bronchial, sometimes amphoric or cavernous. If it is deep, the sound is bronchovesicular. The voice sounds vary with those of the respiration. The tactile fremitus is increased, if the abscess is near the surface. Moist râles are often present, if the abscess is near the surface. The roentgen ray is very useful in locating abscesses deep in the lung. It shows abscesses that cannot be detected in any other way. It also shows whether the abscess is due to a foreign body or not, provided the foreign body is one that causes a shadow. Bronchoscopy is also often of assistance in diagnosis.

INTERLOBAR EMPYEMA

The etiology of interlobar empyema is the same as that of other forms of metapneumonic empyema. The symptomatology is also the same. The difference is in the physical signs, which are usually most obscure. The most important point is a horizontal strip of dulness in the axilla at about the level of the fourth rib, with normal resonance above and below it. In rare instances there is also a strip of dulness in front or behind, corresponding to the line between the lobes. This strip of dulness may, however, be lacking. If there is enough fluid between the lobes to compress the lung a little, the percussion note above and below the line between the lobes may be somewhat tympanitic and the respiration may be changed to bronchovesicular, with perhaps a slight change in the voice sounds. There is almost never any change in the tactile fremitus or much increase in the sense of resistance. The roentgen ray is of the greatest help in the diagnosis of interlobar empyema. It shows plainly what can often only be guessed at or suspected from the physical signs. It renders unnecessary repeated thoracenteses in attempting to determine the location of the pus.

Interlobar empyema ought not be confused with tuberculosis. The onset is very different. The temperature is higher and more irregular; there are the typical signs of a purulent focus and a very marked leukocytosis.

It is evident that, although these conditions are all uncommon, they can be recognized fairly readily from the history and by a careful physical examination. The roentgen ray is not of much assistance in the diagnosis, except in abscess of the lung and interlobar empyema and in the recognition of deep cavities, when it is invaluable. None of these conditions should be confused with pulmonary tuberculosis, if the differences between them and tuberculosis are kept in mind.

483 Beacon Street.

THE RELATION OF PARANASAL SINUS INFECTION TO DISEASE OF THE LOWER RESPIRATORY TRACT *

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There is abundant clinical and some experimental evidence in support of the statement that certain types of disease of the paranasal sinuses tend to produce peribronchial infections, with resultant chronic bronchitis, asthma and bronchiectasis.

Experimental investigations have been principally directed, as one would suppose, to identifying the lymph channels that drain the sinuses. To this end André, Grünwald and Most endeavored to work out the lymph drainage in cadavers. This work, while very thorough, is open to the criticism that injections were made under great pressure and also that it was necessarily limited in its scope. In my own investigations in association with Ryder, living animals were used—rabbits for the investigation of the maxillary sinus, and cats for the frontal sinus. It was essential to use some substance that would permit us to follow the routes very clearly, and india ink was selected for this purpose. This fluid is a suspension of insoluble granules of carbon of about the size of cocci, so that it has the physical characteristics of a dense emulsion of bacteria.

The rabbit was anesthetized, and the skin and the thin external wall of the external superior maxillary bone was punctured. If the point of the needle was free in the sinus cavity and the needle was quickly withdrawn after the injection, some of the ink naturally escaped into the nose and was readily carried away by the nasal secretion. However, a residue remained in the antrum and was taken up by the lymphatics. This

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* From the otolaryngologic department, Cleveland Clinic.

* Read before the Section on Diseases of Children at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

is an important point from the clinical point of view, as I shall show later.

In order to be sure that a liberal amount of the ink would enter the lymphatics, it was necessary to penetrate or wound the sinus mucosa. When the frontal sinus in cats was injected, a small hole had to be drilled through the brow, although unfortunately this procedure allowed much of the fluid to escape into the surrounding tissues and gravity favored its escape into the nose. After the course of the lymphatics was established by the deposits from the india ink, an emulsion of tubercle bacilli was injected into the sinuses. Washings from cases of sinus infection in which there was also an infection in the chest were then injected, and later these experiments were repeated with a mixture of an emulsion of tubercle bacilli and india ink. Necropsies were performed from a few days up to seventy days after the injections.

Similar results were secured from all these experiments. By tracing the carbon deposits we found that the lymphatic absorption from the nasal sinuses was by way of the submaxillary and internal jugular nodes, the lymph ducts, the great veins, the right side of the heart and the lungs. Moreover, the bronchial and mediastinal glands were involved also. In the case of the injection of infectious material, the resultant infection followed the same route. It is interesting to note that in none of our experiments were the faucial tonsils affected. These results were all verified by repeated microscopic observations.

Clinically, the lymph glands that seem to be important are the submaxillaries and the internal jugular or carotids, the latter corresponding to the entire chain of deep cervical nodes in man, including the retropharyngeal nodes. In man, a large gland which lies beneath the posterior belly of the digastric muscle is often referred to as the "tonsil gland." Infection from the sinuses often drains into this gland, causing it to become enlarged. In some cases when this gland becomes enlarged after the tonsils have been removed, it is well to bear in mind that this may be due to infection in the accessory sinuses. Involvement of the bronchial and mediastinal glands, whether they have become infected through the general circulation or by direct extension from the sinuses, seems to play an important part in the production and continuance of peribronchial infection. It is necessary, therefore, to understand thoroughly the anatomic relations of these glands, and for this reason the following brief description as given by Delamare is included here. Delamare classifies the bronchial and mediastinal glands in three groups: (*a*) peritracheobronchial glands; (*b*) intertracheobronchial glands; and (*c*) interbronchial glands.

The peritracheobronchial glands, which are designated as right or left glands according to their anatomic relations, are of about the size of a large pea. The glands on the right are larger and more numerous than those on the left. On both sides they are in intimate relation with the trachea, the bronchi, the inferior vena cava, the surface of the lung, the pulmonary artery, the vena azygos major, and the recurrent laryngeal and pneumogastric nerves.

There are from ten to twelve intertracheobronchial glands; they are uneven in size, and are more numerous under the right than under the left bronchus. Their anatomic relations are with the bifurcation of the trachea above; with the pericardium in front; and behind, with the pulmonary plexus and the anterior surface of the esophagus.

The interbronchial glands occupy the angles of the divisions of the larger bronchi, and, according to Cruveilhier, may be found even in the divisions of the fourth order. These glands are completely buried in pulmonary parenchyma. They are in intimate relation with branches of the pulmonary vessels, particularly with the pulmonary artery, which they may compress when enlarged.

From this description it is easy to understand how infection and the resultant enlargement of these glands may produce cough and pressure on important structures; and how the resultant extrabronchial pressure may cause the retention of secretions within the finer bronchi. It was undoubtedly the enlargement of these glands that suggested the treatment of bronchial asthma and whooping cough by means of the roentgen rays.

An infection of the paranasal sinuses may be present in any one of the following types or stages: acute inflammatory, acute purulent, chronic purulent and chronic hyperplastic. Unless recovery takes place, the tendency of any of these types is to progress in the foregoing order, an acute inflammatory infection giving way to an acute purulent infection, which, as time passes, in turn develops into the chronic purulent type. Up to this stage the disease process shows little tendency to involve the lower respiratory tract except by reflex irritation, although a coincident infection may be present. Even in neglected cases of purulent sinus disease, there is enough drainage through the natural opening to prevent protracted absorption.

Eventually, however, if treatment is neglected or is insufficient, the chronic purulent stage tends to produce great thickening and a pyogenic condition of the mucous membrane; the infection becomes attenuated, and the chronic hyperplastic stage results. The hyperplastic form of sinus disease may often seem to be a distinct entity because there may have been no antecedent symptoms more definite than the occurrence of frequent colds. The process is particularly likely to begin in childhood when acute infectious diseases and malnutrition predispose to the development of chronic involvement of the sinuses.

The hyperplastic is by far the most important form of paranasal infection as a factor in the causation of chronic chest infections. The mucous membrane becomes thickened and soggy, and may show polypoid degeneration. There is almost no drainage through the natural opening. Lavage of the sinus may be of practically no diagnostic value, as there is but little frank pus; but the thickened mucosa is deeply infected and there is protracted drainage and absorption of bacteria and of bacterial products through the lymph channels outlined in our experimental research. Eventually this continuous drainage through the lymph channels leading to the upper mediastinum produces a chronic peribronchial glandular enlargement.

Whatever the primary cause of the hyperplastic sinusitis may be, in some persons by the time all the sinuses are fully developed they may all be infected to some degree, some, of course, being more infected than others. There is often a pansinusitis, but the paramount etiologic significance of the maxillary sinus is indicated by the following considerations: 1. It is developed early, being present and subject to infection soon after birth. 2. Sufficient aeration and drainage are very difficult to maintain. 3. It is larger than the other sinuses and therefore presents a more extensive surface of lymph spaces for the absorption of the products of infection.

TYPES OF LUNG INFECTION THAT MAY BE SECONDARY TO SINUS DISEASE

The three types of lung infection that may be caused by paranasal infection are (1) acute bronchitis; (2) bronchial asthma, and (3) chronic bronchitis and bronchiectasis.

1. *Acute Bronchitis.*—This may be and probably is merely coincident with an acute upper respiratory infection, such as rhinitis, pharyngitis or laryngotracheitis; the possibility of the extension through the lymph channels should, however, be borne in mind.

2. *Bronchial Asthma.*—The rôle played by the nose and accessory sinuses in the causation of bronchial asthma appears to me to be of great importance. Thus, bronchial asthma may be due to (1) secondary peribronchial infection; (2) bacterial or pollen protein sensitization, or (3) reflex causes, as has been explained by Sluder.

Here, again, all the sinuses may be involved and any one of them may be the causative factor. The chronic hyperplastic type of ethmoiditis in which the large polypi filling the meatuses cause nasal obstruction is a frequent primary cause of bronchial asthma.

I heartily agree with Lynch, who says:

> When the mucous membrane lining sinus cavities has been the seat of a chronic degenerative process of inflammation lasting for years it ceases to be mucous membrane, it is all pathological and no amount of ventilation or drainage will bring that membrane back to normal. In operating on these cases where a direct inspection can be made, besides finding polypoid degeneration of the mucous membrane and pyogenic membrane, it is very common to find cystic encapsulation of pus.

Given a case of bronchial asthma in which the sinuses are involved by hyperplastic processes and the nasal cavities contain polyps, one cannot expect that any prolonged amelioration of symptoms will follow any other treatment than the complete surgical removal of the hyperplastic tissues.

3. *Chronic Bronchitis and Bronchiectasis.*—These will be considered together, since they are due to the same underlying causes and tend to follow each other in the order given. Protracted flooding of the lymph channels with infectious material from the hyperplastic maxillary sinus tends to produce a chronic peribronchitis. This is often clearly shown on the roentgenograms of children. Frequent chest colds may be the first evidence of this extension, but a definite chronic bronchitis is eventually established and in a neglected case the final result is a bilateral bronchiectasis, which, when well established, is of course permanent.

A sharp distinction must be drawn between those cases of bronchiectasis which result from chronic sinusitis and those which are due to other causes. Thus, besides infections of the paranasal sinuses the common eiologic factors of chronic bronchitis and bronchiectasis are: (*a*) lung abscess; (*b*) foreign bodies, and (*c*) fibroid phthisis. In fact, any long continued suppuration in the lung tends to produce deformity and dilatation of the bronchi; in such cases the infrequent presence of a sinus infection is only a coincidence. It is usually possible to identify the cause of the chronic lung suppuration in these cases, and they, moreover, usually show definite anatomic characteristics which differentiate them from those cases in which sinus infection is the exciting cause.

The association of sinus disease with bronchiectasis is far too common to be accidental. The most typical cases start in childhood. A careful history usually gives the information that the child has been subject to frequent and protracted colds, with great tendency to cough. The onset of the sinusitis may be traced to some one of the acute infectious diseases, measles and whooping cough being notorious offenders. A chronic cough with bronchitis follows. The child is usually undernourished and may or may not have symptoms of an involvement of the nose or sinuses. Freedom from symptoms therefore should not prevent a careful clinical and roentgenologic examination of the sinuses. At the same time, stereoscopic roentgenograms of the chest, in both the anteroposterior and the oblique positions, will show some degree of peribronchial enlargement and a thickening of the bronchi at the bases. If this condition is not corrected, the eventual course may be a pansinusitis with bilateral diffuse bronchiectasis. The lesson is obvious—the early recognition and treatment of sinus disease in children.

Euclid Avenue at Ninety-Third Street.

[Editorial Note.—This paper, together with the two papers that precede it, by Dr. Jackson and by Dr. Morse, constitute part of a symposium on "Chronic Nonspecific Infections of the Lungs and Bronchi." The two remaining papers, by Dr. Brennemann and by Dr. Graham, will be published in the next issue of The Journal.]

CLASSIFICATION AND TREATMENT OF CHRONIC ARTHRITIS *

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AND
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The classification of chronic arthritis is a problem that has interested students of medicine for many years. Twelve years ago, L. F. Barker[1] published a comprehensive review of the subject in which he said:

> Despite the real progress which has been made, it must be confessed that the arthropathies are still veiled in deplorable obscurity; and, as we shall see, the dimness, while due chiefly to our inability as yet to look at the processes from an etiological viewpoint, is to some extent dependent upon an intervening dust-cloud of terminology.

Dr. Barker's remarks still hold true today. The etiology of many cases of chronic arthritis is still unknown, and the terminology for the various types is still in a state of confusion.

During the last four years, we have studied 612 cases of chronic arthritis in the Cornell Clinic. As our familiarity with the disease has increased, we have come almost unconsciously to assign our patients to various clinical groups. The classification, therefore, that we propose is essentially clinical. A certain amount of bacteriologic and roentgenographic work has been done in connection with selected cases, but we have had no opportunity as yet to correlate the various clinical types with their respective pathologic lesions. Fortunately, the pathologic anatomy of chronic arthritis has received considerable study, and the clinical classification that we suggest is quite in harmony with the pathologic classifications that have been made of this disease by various workers in morbid anatomy.

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* Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926

[1] Barker, L. F.: Am. J. M. Sc. 147: 1, 1914.

PATHOLOGY OF CHRONIC ARTHRITIS

Space does not permit an extensive review of the literature on this subject. One of the most thorough studies of the pathology of arthritis is that of Nichols and Richardson,[2] published in 1909. They divide the joint lesions of chronic arthritis into two very definite pathologic groups:

1. Those which arise from primary proliferative changes in the joints, chiefly in the synovial membrane and in the perichondrium. This type they term "proliferative" arthritis.
2. Those which arise primarily as a degeneration of the joint cartilage. This group is referred to as "degenerative" arthritis.

These two pathologic types are characterized by distinct gross and histologic differences, and each type manifests itself clinically by a characteristic group of symptoms.

In proliferative arthritis, proliferation of the synovial membrane produces a layer of granulation tissue which sooner or later may extend over the joint cartilage with more or less destruction of the cartilaginous tissue. Furthermore, proliferation of the perichondrium may lead to the formation of new cartilage or bone. The capsule and other periarticular structures are also involved in this process. These truly inflammatory changes, if not checked, lead eventually to partial or complete destruction of the joint cavity with subsequent fibrous or bony ankylosis. In the opinion of Nichols and Richardson, these changes represent a reaction to injury that may be either bacterial or toxic in their nature.

In degenerative arthritis, the primary change in the joint is a degeneration of the cartilage of the articular surfaces, which gradually becomes softened and eroded. The underlying bone thus becomes exposed, so that eventually two bony surfaces may be in contact. As a result, the exposed bone becomes extremely dense and acquires a high degree of polish. The head of the bone is enlarged and leads to an actual increase in the size of the articular surface. Secondary changes consist of an increase in the activity of the perichondrium at the periphery of the joint where the cartilage and capsule come together. As a result of this perichondrial activity, there is a new formation of cartilage which may be transformed into bone. This newly formed bony tissue takes the form of lipping and irregular exostoses, so readily demonstrable in roentgenograms.

Table 1.—*Distribution of Cases*

Proliferative arthritis	414 Cases
Degenerative arthritis	182 Cases
Gout	4 Cases
Intermittent hydrops articulorum	2 Cases
Unclassified	10 Cases

This important work of Nichols and Richardson corroborated the earlier work of English and German pathologists and has more recently been verified by the studies of Ely.[3] According to these authors, these two types of chronic arthritis could not be distinguished etiologically. They thought that the same cause might produce the primary change either in the synovial membrane or in the cartilage, and that different causes might produce the same type of pathologic lesion.

CLASSIFICATION

In this classification of 612 cases, we have adopted the terminology of Nichols and Richardson. The great majority of our cases fall into one or the other of their two groups. The entire series is grouped in table 1, in which it will be seen that proliferative arthritis constituted about two thirds of all the cases admitted to the arthritis clinic, while degenerative arthritis made up most of the remaining third.

Proliferative arthritis includes all of the frankly inflammatory arthropathies. It can be subdivided clinically into:

1. Chronic infectious arthritis, referable to foci of infection.
2. Specific arthritis, caused by specific bacterial infection. The gonococcal, syphilitic and tuberculous cases come in this group, as well as the so-called surgical joints, staphylococcus arthritis, pneumococcus arthritis, etc.
3. True arthritis deformans, a chronic progressive polyarthritis of unknown origin.

The cases of degenerative arthritis have also been divided into subgroups:

1. Arthritis of the menopause.
2. Degenerative monarticular arthritis (morbus coxae senilis).
3. Senile arthritis.

The complete classification of the 612 cases is given in table 2, in which it will be seen that two types of arthritis make up the great bulk of the material in the Cornell Arthritis Clinic—chronic infectious arthritis, and arthritis of the menopause.

Table 2.—*Complete Classification of Six Hundred and Twelve Cases of Arthritis*

Proliferative Arthritis		
1. Chronic infectious type	379 Cases	
2. Specific arthritis	18 Cases	
3. True arthritis deformans	17 Cases	414 Cases
Degenerative Arthritis		
1. Arthritis of the menopause	145 Cases	
2. Degenerative monarticular arthritis	20 Cases	
3. Senile arthritis	17 Cases	182 Cases
Gout		4 Cases
Intermittent hydrops articulorum		2 Cases
Unclassified		10 Cases

We will now proceed to a more detailed discussion of the various groups of arthritis outlined above.

PROLIFERATIVE ARTHRITIS

Chronic Infectious Arthritis (Focal Infection Type).—This has been by far the most common type encountered in the clinic. Two hundred of these cases have recently been subjected to careful analysis. *This type of arthritis occurs much more frequently in females than in males. It is essentially a disease of young people, the average age being 35.* Exposure plays a secondary rôle. The most common etiologic factor is some primary focus of infection. In our series, infected tonsils were the commonest focus, occurring either alone or in combination with other foci in 61 per cent of the cases. Next in frequency were infections about the teeth. The teeth, alone or in combination with other foci, were the seat of infection in 33 per cent of the cases. The sinuses, prostate, gallbladder, colon and cervix harbored foci of infection in a few cases. It is interesting to note that the age incidence was much earlier in the tonsil cases than in the dental cases, the average age being 30 years in the former, and 42 years in the latter group.

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[2] Nichols, E. H., and Richardson, F. L.: J. M. Research **21**: 149, 1909.

[3] Ely, L. W.: Inflammation in Bones and Joints, Philadelphia, J. B. Lippincott Company, 1923.

The patient often dates the onset of symptoms from some disturbance of the physical equilibrium, such as an acute infection, exposure to cold, a surgical operation, or a confinement. A majority, but not all, of the tonsil cases give a history of a preceding attack of tonsillitis or sore throat.

Chronic infectious arthritis is a polyarticular disease which may involve any joint in the body. It may come on suddenly with fever and other acute symptoms, or the onset may be very gradual. Locally, the lesions are characterized by inflammatory and proliferative changes in the joints involved. It is almost always migratory in its early stages, but after several attacks the joints become permanently injured. The fingers, knees and shoulders are the joints most frequently affected. This is a painful form of arthritis, particularly in the early stages, when there is considerable periarticular involvement.

Physical examination usually but not always reveals a patient somewhat underweight and anemic. The joints affected usually present a characteristic appearance. There is some swelling of the soft parts, and the overlying skin is warm and sometimes reddened. The swelling is due for the most part to an outpouring of inflammatory exudate into the periarticular structures. Tenderness is usually present, and motion, either active or passive, is painful. In the later stages the swelling may disappear, but usually there is enough new growth of fibrous tissue about the joint to cause a persistent periarticular thickening. This is shown most typically in the finger joints, in which the characteristic fusiform enlargement may be present for years. Ankylosis is very common in this type of arthritis, but usually does not occur until the second or third year of the infection. It is at first fibrous but later may become bony.

The laboratory findings are mostly negative. Cultures from foci of infection yield either *Streptococcus hemolyticus* or *Streptococcus viridans*. In our experience, *Streptococcus hemolyticus* is more frequently obtained from the tonsils and *Streptococcus viridans* from root abscesses. In fourteen cases the blood sugar showed an average of 125.3 mg. per hundred cubic centimeters, which is somewhat above the normal limit. In seven cases in which the basal metabolism was determined, the findings were negative.

The treatment of chronic infectious arthritis consists of the removal of all foci of infection: vaccine therapy, and physiotherapy.

The most important feature of the treatment is the removal of foci. Vaccines, particularly of the autogenous variety, appeared to hasten recovery in some cases, particularly if large doses were used. Physiotherapy has been of value in accelerating the absorption of exudates, and in hastening the return of function in partially ankylosed joints. The usual procedure has been: (1) radiant heat for from fifteen to twenty minutes; (2) diathermy, twenty minutes; (3) massage, and (4) passive movements, when indicated. In cases of polyarthritis, radiant heat in the form of a bridge was sometimes substituted for diathermy.

In a series of ninety-two patients who were being treated at the Cornell Clinic over a period of time lasting from three months to three years, the results were as follows: Eighty-two per cent of the patients treated during the first six months of their disease either recovered completely or were greatly improved. The percentage of favorable results decreased with each year, so that patients whose symptoms had persisted for five years or more before coming to the clinic rarely received very marked benefit from any form of treatment.

Specific Infectious Arthritis.—Eighteen cases in the present series fell into this group. Etilogically, they may be divided as gonococcus arthritis, eleven cases; tuberculous arthritis, five cases, and syphilitic arthritis, two cases.

Gonococcus Arthritis: Ten of these cases were in men and one in a woman. All gave a history of gonococcal urethritis. These patients were treated locally by the urologists, while the arthritic condition was being treated with physiotherapy and vaccine. We have found that gonococcus vaccine is more effective when given intravenously than when given subcutaneously. A much higher immunity is obtained by this method, and the foreign protein reactions which are usually induced are also of value. We have started the patient on doses of 25 million gonococci and have gradually increased the dosage to several hundred million.

Tuberculous Arthritis: There were five cases of tuberculous arthritis distributed as follows: hip, two cases; wrist, one case; elbow, one case; ankle, one case. These cases presented the typical clinical and roentgenographic picture of tuberculous joint disease, and were all referred to the orthopedic clinic for treatment.

Syphilitic Arthritis: Two cases have been classified as syphilitic arthritis, but neither of them was typical of the disease. One, a Charcot joint occurring in typical tabes, should more properly have been classified as a trophic arthropathy. The other case was that of a woman, aged 50, with tertiary syphilis and a chronic polyarthritis of the proliferative type. No foci of infection could be found. Roentgenograms in this case showed a destructive lesion of the joints, which was considered syphilitic in type. The typical syphlitic joint is usually monarticular and is caused by an extension of a specific periostitis into the synovial membrane. This patient was lost sight of, so no therapeutic test was possible.

Arthritis Deformans.—Eighteen cases in our series have been classified as arthritis deformans. This is the type spoken of by Barker as "primary progressive polyarthritis" and, as he says, is "the most malign of all arthropathies." English writers refer to this rather rare disease as "rheumatoid arthritis." This type is considered by many to be nothing more than an extremely severe grade of chronic infectious arthritis. Certainly in the early stages it presents very much the same clinical picture. Its chief characteristic is its steadily progressive course. It is sometimes referred to as atrophic arthritis. Usually there is considerable periarticular infiltration, and later on an actual thickening of the capsule. Ankylosis occurs early, and there is marked destruction of the articulating surfaces, with telescoping of the joints and ulnar deviation of the hands and fingers. The process tends to be symmetrical. The temporomaxillary joints are frequently involved.

The average age of the eighteen patients in this group was 44 years. Fourteen were females and four males. It was very significant that the average duration of the disease on admission to the clinic was seven years. Most of these cases, if seen during the first years of the disease, would probably have been classified as infectious arthritis. However, in nine out of the eighteen cases no foci of infection could be located. In five cases the tonsils showed evidence of infection, and in two others root abscesses were found.

Three of these patients were subjected to tonsillectomy. One had the cervix cauterized. Streptococcus vaccine and physiotherapy, including high colon irrigations, were tried on most of these patients. The results of treatment were for the most part negative, except in one very interesting case, in which the patient was found sensitive to a number of articles of food. When these foods were removed from the diet, the patient made marked improvement. We were hoping that this finding might open up a new line of attack on arthritis deformans, but we have not been able to duplicate this result in any other patient.

DEGENERATIVE ARTHRITIS

Degenerative arthritis is usually a milder disease than proliferative arthritis. As stated above, the lesions originate in the bone and cartilage, and in the majority of cases the soft parts are never seriously involved. For this reason, degenerative arthritis is usually less painful than the inflammatory types already discussed.

Richardson has aptly described degenerative arthritis as occurring in those who are "physiologically old." It is usually associated with arteriosclerosis, obesity, gray and falling hair, and the other stigmas of somatic deterioration. For this reason we have come to look on this form of arthritis as noninfectious. This, of course, is difficult to prove, but the character of its pathologic changes, its association with other sclerotic and degenerative processes in the body, the absence in most cases of definite foci of infection, and the clinical course of the disease (absence of fever and inflammatory reaction about the joint), all speak rather strongly against the infectious origin of degenerative arthritis.

Altogether, 182 of our cases have fallen into this group. These have been subdivided clinically as: arthritis of the menopause, 145 cases; degenerative monarticular arthritis, twenty cases, and senile arthritis, seventeen cases.

Arthritis of the Menopause.—Next to infectious arthritis, this has been the most common type of arthritis seen in the clinic. More than 25 per cent of the whole series fall into this group. As previously stated, arthritis of the menopause is a chronic degenerative polyarthritis occurring in obese midde aged women at, or just after the menopause. In a series of fifty cases of menopause arthritis that we have recently studied, the average age was 52 ½ years.[4] In almost every case the patient was considerably overweight. Symptoms usually appear during the first two years after the menopause. Sometimes the arthritis occurs simultaneously with the menopause, and in a few cases the rheumatic symptoms have preceded the change of life by a short interval.

Foci of infection are rarely demonstrable, and for this reason we question very seriously the infectious origin of the disease. The morbid changes are those of a degenerative ostearthritis. The cartilage becomes thin, and there is lipping and spur formation of the bone at the margins of the joints involved. Occasionally there is a secondary thickening of the synovial membrane.

The onset of the disease is insidious. The first symptom is a slight stiffness in the knees, which gradually becomes more noticeable, especially in walking or bending. In the series of cases that we studied, both knees were usually affected. Sometimes, however, the symptoms were more marked in one knee than in the other. The lumbar vertebrae and the bones of the feet are often involved. In a large percentage of patients there are well developed Heberden's nodes on the distal phalangeal joints. At times, a shoulder or hip joint may be implicated.

The physical appearance of these patients is quite characteristic. They are almost always overweight, sometimes to a marked degeree. The posture is faulty, and there is usually some degree of flatfoot. Examination of the joints involved shows little, if any, swelling, but in cases of long duration, the heads of the bones adjacent to the joint may be enlarged. On flexion, a certain amount of crepitus is usually detected. Roentgenograms show distinct lipping and spur formation. True ankylosis does not occur.

The progress of this type of arthritis is very slow, but with the passing years the patient's discomfort becomes more marked. There is little tendency toward involvement of other joints. On the other hand, spontaneous recovery seldom, if ever, occurs.

The most important part of the treatment is reduction of the patient's weight, which is best accomplished by a low calory diet consisting chiefly of green vegetables. Iodides and thyroid extract are also of value. We usually give these patients syrup of hydriodic acid, 1 drachm (4 cc.) three times a day after meals. The thyroid extract is pushed to the limit of tolerance. Physiotherapy, especially diathermy, gives much relief. A few of the patients have been benefited by colonic irrigations, a fact which suggests that the disease may be referable in some instances at least to an intestinal toxemia. Ovarian extract has been of no value. We have tried streptococcus vaccine on a considerable number of patients without any effect.

Degenerative Monarticular Arthritis (Morbus Coxae Senilis).—This is another form of degenerative arthritis which occurs most frequently in the hip, in which it is spoken of as "morbus coxae senilis." Occasionally it is seen in the shoulder or knee. Twenty cases of this type occurred in our series. The distribution was as follows: hip, sixteen cases; shoulder, two cases and knee, two cases. This type of arthritis occurs in late middle life. The average age in our group was 58 years. Fourteen were men and six, women. Twelve of the fourteen men were outdoor workers. Eight of the twenty patients gave a definite history of trauma. Fourteen of the patients had had roentgenograms made. The pathologic changes in this group of cases are more marked than those occurring in menopause arthritis. The lipping is more obvious, and there is more destruction of the articular surfaces. In fourteen cases, no focus of infection could be established. Six patients had dental treatment for pyorrhea, and in one case the tonsils showed some evidence of infection.

In a middle-aged patient with chronic monarticular arthritis of the hip, the presumption is that the lesion is of a degenerative type. It must be remembered, however, that infectious arthritis is occasionally monarticular and that it may involve the hip joint. The possibility of tuberculous arthritis must also be considered.

We have not been able to correlate this type of arthritis with focal infection. Furthermore, the removal of possible foci, such as pyorrhea, has never resulted in benefit to the patient's condition.

Our treatment in this group of cases has been similar to that for menopause arthritis—chiefly iodides, and physiotherapy. Vaccines of all kinds have proved useless. Only six of the sixteen patients treated showed any definite improvement. On the other hand, in none of the patients did the disease progress to ankylosis while they were under our observation.

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[4] Cecil, R. L., and Archer, B. H.: Arthritis of the Menopause, J. A. M. A. 84:75 (Jan. 10) 1925.

Senile Arthritis.—Seventeen of our cases were classified under this heading. This form of arthritis is also of a degenerative type, but has a somewhat different distribution from the two forms already discussed. The average age of the patients was 67 years. Three of them were men and fourteen were women.

Definite foci of infection were noticeably absent. One patient had an infected prostate, and two showed severe pyorrhea. The rest were without any discoverable foci.

This form of arthritis may attack almost any joint in the body. It is always polyarticular. It is almost physiologic in the spine and also in the distal phalangeal joints, in which it shows itself in the form of Heberden's nodes. The knees, knuckles, feet and shoulder joints are also frequent sites of involvement.

The lesion here, as in the other two types, is essentially an ostearthritis, manifesting itself as a new growth of bone and cartilage around the edges of the joint. As in the other forms of degenerative arthritis, true ankylosis does not occur. In the eleven patients treated with iodides and physiotherapy, there was definite improvement in two and slight improvement in five others.

GOUT

We have had four cases of gout in our series—three men and one woman. The average age was 34½ years. When seen in the clinic only one showed an involvement of the great toe, but the others gave a history of previous attacks in the great toe. Three cases showed involvement of the knees and other large joints. The fingers were affected in two cases. Only one patient showed tophi in the ear. The average uric acid content of the blood was 6 mg. per hundred cubic centimeters. Three of the patients were treated in the usual manner with a purine-free diet, colchicum and cinchophen. All showed definite improvement.

INTERMITTENT HYDROPS ARTICULORUM

We have encountered only two instances of intermittent hydrops articulorum. Both patients were men—one, aged 40 and the other 49. In both, the attacks came regularly every ten days. The duration was two or three days in one case and one day in the other. In the first patient, the right ankle became swollen, and in the second patient both knees and occasionally the right hip were swollen and painful at regular intervals of ten days.

Both patients showed infected tonsils. One had a tonsillectomy without any improvement. Later on, however, he was found to have a chronic infection of the prostate. After several months of prostatic massage, there was considerable improvement in his condition. Whether this was "cause and effect," we are unwilling to say. The follow-up two years later found his condition still much improved. The second patient with intermittent hydrops received no treatment in the clinic.

SPONDYLITIS

Spondylitis perhaps deserves especial mention. The vertebral joints, like other joints in the body, are susceptible to the various types of arthritis. Infectious arthritis may occur in a single vertebral joint, but more frequently it involves several vertebrae. In our experience, it occurs most frequently in the cervical and dorsal regions of the spine. In severe cases, however, it involves frequently the whole vertebral column, producing considerable periarticular reaction and spasm of the dorsal muscles. Fibrous ankylosis may occur early, with production of the so-called poker spine. Like other forms of infectious arthritis, it is amenable to successful therapy if the foci of infection, usually in the tonsils, are removed early.

True arthritis deformans frequently attacks the spine and progresses rapidly to complete ankylosis.

Degenerative arthritis usually occurs in the lumbar spine and is frequently seen in association with arthritis of the menopause and senile arthritis. Indeed, lipping of the lumbar vertebrae is almost a physiologic process in late middle life.

HEBERDEN'S NODES

Heberden's nodes are present in practically every case of menopause arthritis. They may develop independently, however, of any other joint involvement, when they fall in the category of senile arthritis. In our experience, they are more apt to develop in people who work hard with their hands and are exposed to the rigors of cold weather.

COMMENT

One of the advantages of seeing arthritis in an outpatient department is that the material comes under observation at a comparatively early stage of the disease. After four years of experience with chronic arthritis in the Cornell Clinic, we are convinced that this disease occurs in two distinct and fundamentally different clinical forms—the proliferative, which is almost certainly infectious, and the degenerative, which in our opinion is noninfectious. The possibility of some toxic factor in the causation of degenerative arthritis cannot be excluded. But the same may be said of arteriosclerosis, myocarditis, nephritis, gray hair and the various other stigmas of advancing years.

This division of arthritis into two groups rests on definite pathologic, and probably etiologic, grounds. The three subdivisions which we have made under each group are based largely on clinical manifestations. In the proliferative type, however, different infectious agents are probably responsible for the different clinical groups. The three subdivisions of degenerative arthritis are largely a matter of clinical convenience, though here again a variety of etiologic factors may play a part. It seems quite possible, for example, that menopause arthritis is dependent in some way on endocrine disturbances which as yet are not thoroughly understood.

The differential diagnosis between the two main types of chronic arthritis is usually easy. The proliferative type is migratory or progressive. There is usually pain, swelling and limitation of motion in some of the joints. Roentgenograms in the early stages show little, if any, change. Later on, there is clouding of the interarticular space, and as the granulation tissue invades the articular surface, partial or complete obliteration of the joint cavity takes place.

Degenerative arthritis occurs in middle-aged and elderly people. Physical examination is often negative in the early stages. The arthritis is apt to be monarticular or at least limited to three or four joints. The process is very slow. Roentgen-ray plates show new bone formation at the line of insertion of the capsule, with the characteristic lipping and spur formation. The interarticular space may show irregularities but is practically never obliterated, as ankylosis does not occur.

The significance of this division of chronic arthritis into two groups is of the greatest clinical importance, if the proliferative type is infectious and the degenerative type noninfectious. In our opinion, the failure of physicians to make this distinction has led in the past to much unnecessary surgery. This applies particularly to the indiscriminate extraction of teeth in middle-aged and elderly people with degenerative arthritis. The removal of definite foci of infection in any disease is good practice, but in our experience this procedure has never proved to be a specific treatment for degenerative arthritis. In respect to prognosis, very little can be promised to the patient in return for a radical removal of foci.

In the infectious type, too much emphasis cannot be placed on a relentless elimination of all sources of infection. Too often the physician feels satisfied after the tonsils and teeth have been attended to. In the obscure cases, this is not enough. On the other hand, in the degenerative type the problem of focal infection is of secondary importance in the general management of the case. Though incurable in the proper sense of the word, this condition can often be greatly relieved by alterative measures such as iodides, thyroid extract low carbohydrate diet and physiotherapy.

SUMMARY

1. In a study of 612 cases of chronic arthritis, approximately two thirds (68 per cent) were of the proliferative type and one third (30 per cent) were of the degenerative type.

2. Proliferative arthritis occurs most frequently in young people; degenerative arthritis is more often seen in the middle-aged and elderly.

3. The commonest form of proliferative arthritis is associated with focal infection about the teeth or tonsils. The commonest variety of degenerative arthritis is the arthritis of the menopause.

4. The proliferative type of chronic arthritis is presumably an infectious process. Degenerative arthritis has not been proved to be of an infectious nature. It appears more likely that this form of arthritis, as the name implies, is a degenerative process analogous to arteriosclerosis and the other degenerative changes that attack various organs in middle age.

5. The essential feature in the treatment of proliferative arthritis is the removal of all foci of infection. In degenerative arthritis the treatment should be directed chiefly toward accelerating metabolism with iodides, physiotherapy, and other appropriate measures. Many of these patients are improved by a low caloric diet.

The Slit Lamp.—The ophthalmoscope deals with two dimensions in space, and the older methods of focal illumination were inadequate to supply the third dimension; our measurements of depth, our localization along the axis of the eye, were at best good guessing. In 1912, Gullstrand invented the first slit lamp and incidentally supplied the third dimension. The original slit lamp was improved and associated with the corneal microscope by Henker. Vogt added the adjustable slit, which gave the "optical section." The slit lamp and corneal microscope, as made by Zeiss, allow us to localize along the optical axis of the eye, without the use of any academic methods, within a limit of one fifth of a millimeter. The Czapski-Zeiss microscope is provided with Ulbrich's micrometer drum, divided into tenths of a millimeter, and measures the travel of the instrument from one focus to another. With this we can gage the depth of the anterior chamber or the thickness of the lens with fair accuracy.—Butler, T. H., *Lancet*, Aug. 14, 1926.

THE USE OF O-IODOXYBENZOIC ACID IN THE TREATMENT OF INFECTIOUS ARTHRITIS *

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O-iodoxybenzoic acid and its precursors o-iodbenzoic acid and o-iodosobenzoic acid, were first described by Meyer and his co-workers,[1] in 1892. The action of these substances was first investigated in 1899 by Heinz,[2] who attempted to study the action of nascent iodine in the body by their use. Loevenhart and Grove[3] discussed the preparation and modification of these preparations and studied the effect of sodium iodoxybenzoate on the blood. They found only slight changes following its intravenous administration, marked by a mild polymorphonuclear leukocytosis. Grove and Loevenhart[4] studied the effect of sodium iodosobenzoate and sodium iodoxybenzoate on the respiratory center and concluded that the apnea produced by these compounds was due to the presence of the oxygen combined with the iodine. They also studied the antagonism between sodium iodosobenzoate and hydrocyanic acid in regard to the respiratory center.

Arkin[5] studied the germicidal action of the compounds and found that they had a high germicidal action against the staphylococci. Hektoen[6] found that dogs given intravenous injections of sodium iodoxybenzoate produced more antibodies than the control animals. Amberg and Knox[7] studied the action of sodium iodoxybenzoate on the local allergic reaction and found that it diminished the intensity of the intracutaneous reaction when given intravenously in rabbits, while iodbenzoic acid does not influence the process. They concluded that its effect was on the inflammatory reaction itself and that the oxygen is responsible for this action.

Arkin[8] showed that sodium iodoxybenzoate, when mixed with human serum, in vitro, markedly stimulated the phagocytosis of streptococci and staphylococci by human leukocytes. He[9] also demonstrated that sodium iodoxybenzoate stimulated the production of hemolysin and agglutinin in rabbits, when injected intravenously shortly after immunization.

Loevenhart and Eyster[10] studied the effects of sodium iodosobenzoate and sodium iodoxybenzoate on the isolated mammalian heart. They found a marked increase in amplitude after the first administration, followed by a decreased amplitude.

CHEMICAL COMPOSITION

Pure o-iodoxybenzoic acid is practically white, but turns pink when exposed to light. The free acid is insoluble in cold water and slightly soluble in hot water. The sodium and ammonium salts are freely soluble. It is an oxidizing substance by virtue of the oxygen combined with the iodine. "It oxidizes hydriodic acid quantitatively, and the liberated iodine can be measured by titration with tenth normal sodium thiosulphate, starch being used as an indicator."[11]

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* From the Departments of Pharmacology and Internal Medicine, University of Michigan.

* Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Meyer and Wachter: Ber. d. d. Chem. Gesellsch. **25**: 2632, 1892. Askinasy and Meyer: Ibid. **26**: 1354, 1893. Hartmann and Meyer: Ibid. **26**: 1929, 1893; **27**: 1600, 1894.

[2] Heinz: Virchows Arch. f. path. Anat. **155**: 44, 1899.

[3] Loevenhart and Grove: J. Pharmacol. & Exper. Therap. **3**: 101, 1911.

[4] Grove and Loevenhart: J. Pharmacol. & Exper. Therap. **3**: 131, 1911.

[5] Arkin: J. Pharmacol. & Exper. Therap. **3**: 145, 1911.

[6] Hektoen, Ludvig: Proc. Chicago Path. Soc. **8**: 138, 1911.

[7] Amberg and Knox: J. Pharmacol. & Exper. Therap. **3**: 223, 1912.

[8] Arkin: J. Infect. Dis. **3**: 427, 1912.

[9] Arkin: J. Infect. Dis. **3**: 349, 1915.

[10] Loevenhart and Eyster: J. Pharmacol. & Exper. Therap. **5**: 21, 1913.

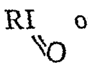
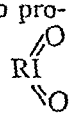
The acid should titrate 100-102 per cent with sodium hydroxide. The reduced substance, iodbenzoic acid, has a melting point of from 161 to 162 C. The dissociation constant is given as K = 0.132.

Table 1.—*Chemical Requirements for O-Iodoxybenzoic Acid**

	Theoretical	We Found	Required: Not More	Required: Not Less
Iodine content......	45.33%	44.97%-45.03%	46.50%	44.6%
Active oxygen......	11.43%	11.25%-11.40%	....	11.2%

* The chemical observations reported in this table were made on samples of drug that have been used clinically with good results.

TOXICITY AND PATHOLOGY

From the animal experiments carried on in this laboratory, we have concluded that the toxicity of the drug is determined by the rate of injection rather than by the quantity of the drug given. Thus, a rapid intravenous injection of 0.3 Gm. in 5 per cent solution will usually kill a rabbit, while 1 Gm. may be given slowly without causing death. Repeated injections of the drug do not produce gross macroscopic lesions in any of the organs. However, following a single large dose given rapidly, there is a slight congestion at the base of the lungs. The question of the mechanism of death, the cause of the apnea, and the fall in blood pressure is discussed by Loevenhart and Grove. They conclude that since iodbenzoic acid does not produce these conditions, the oxygen combined with the iodine is the responsible factor. However, we feel sure that it cannot be explained on the basis of the oxygen acting as O_2, since an insufficient amount of oxygen is given to produce such results, and we believe the  $\mathrm{RI}{\diagdown}\mathrm{O}$ or  $\mathrm{RI}\begin{smallmatrix}{/\!\!/}\mathrm{O}\\ {\diagdown}\mathrm{O}\end{smallmatrix}$ molecule must be responsible for these differences.

The drug is irritant to the tissues but does not produce a slough. It is antiseptic and irritant when sprayed on the mucous membranes in twentieth molar solution. It was found quite efficient when applied locally in Vincent's angina and trench mouth, but is not superior to the ordinary oxidizing agents used in the routine treatment of these conditions.

USE IN ARTHRITIS

Without entering into a detailed discussion of the causation of chronic arthritis, it seems probable that most cases are due to an infectious process related to a low-grade infection. Since o-iodoxybenzoic acid has been shown to stimulate the body defenses and is definitely germicidal for streptococci and staphylococci in high dilutions in the presence of blood serum, we thought that it might be of value in the treatment of chronic arthritis.

Forty-three patients have been treated with the drug and observed over a sufficient period of time to warrant inclusion in this report. The disease was acute or subacute (of less than six months' duration) in four cases; in the remainder, it was chronic. Table 2 shows that, of the chronic group, one patient had had the disease for from six months to a year; nine from one to two years; nine from two to five years; nine from five to ten years, and eleven for ten years or more. Twenty-four of the patients were men and nineteen were women. Table 3 shows the age of the patients and the improvement gained. It will be seen that the ages varied from 10 to 69 years, and that the greater number were between the ages of 30 and 39. All of the cases except two were of the group known as infectious arthritis of unknown cause. Of this group, the process was considered to be of the periarticular or atrophic variety (arthritis deformans) in thirty-five. Two showed evidence of marked hypertrophic changes. Five of the cases were of the type known as Still's disease, which we consider a form of the atrophic variety, and we have included them in that group. Of the five patients with Still's disease, four were children and one was 25 years old. The majority of the patients presented evidence of considerable crippling and deformity. Crippling and deformity have been taken to mean the presence of disturbance in function other than that due to the presence of pain and swelling, but such as is caused by tendon and muscle contraction, muscular atrophy, ankylosis and subluxations. On this basis, four of the chronic cases presented no crippling, while three patients had slight crippling, eleven moderate, and twenty-one marked crippling, as shown in table 4.

The method of treatment was as follows: All patients were hospitalized, and their activity governed largely by their ability to move about. All were con-

Table 2.—*Improvement Obtained by Arthritic Patients Treated With O-Iodoxybenzoic Acid*

Duration of Disease	No. of Cases	Improvement: Marked	Improvement: Moderate	Improvement: Slight	Improvement: None
Acute					
From 6 wks. to 2 mos....	4	4	..	..	..
Chronic					
From 6 mos. to 1 yr.....	1	..	1	..	..
From 1 to 2 yrs..........	9	7	..	1	1
From 2 to 5 yrs..........	9	6	2	1	..
From 5 to 10 yrs.........	9	5	2	2	..
More than 10 yrs.........	11	2	5	2	2
Totals and Percentages.........	43 or 100%	21 or 49%	10 or 23%	6 or 14%	3 or 7%

Table 3.—*Age of Patients and Improvement Gained*

Age of Patients	No. Cases	Marked	Moderate	Slight	None
From 10 to 19 years	6	5	..	..	1
From 20 to 29 years..........	7	4	3	..	..
From 30 to 39 years..........	15	6	5	3	1
From 40 to 49 years..........	7	3	1	2	1
From 50 to 59 years..........	5	4	1	..	..
From 60 to 69 years..........	2	1	1	..	..

Table 4.—*Improvement After O-Iodoxybenzoic Acid Treatment in Patients Showing Crippling*

Degree of Crippling (Chronics)	No. of Cases	Marked	Moderate	Slight	None
Without......................	4	4	..	..	..
Slight.......................	3	3	..	..	..
Moderate.....................	11	6	4	1	..
Severe.......................	21	7	6	5	3

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[11] The following method was the one employed: Add 2 Gm. of o-iodoxybenzoic acid to 50 cc. of cold water; drop in 3-4 drops of ammonium hydroxide, shaking until solution is complete. Add 2-5 Gm. of solid potassium iodide and as soon as this is dissolved acidify with 1:1 HCl. Titrate at once with tenth normal sodium thiosulphate, delaying the addition of starch paste indicator as long as possible.

fined to bed during and after the treatment until the reaction, if any, had disappeared. Diagnosis was based on a thorough clinical study of each case, including roentgen-ray examination of typically affected joints, an orthopedic examination, and a search for foci of infection. All except two acute cases had had previous treatment, the majority by a great many therapeutic measures including physiotherapy, protein shock, removal of foci of infection, and orthopedic procedures.

We employed no accessory treatment other than the use of analgesics for the relief of pain, except as follows: In those cases presenting evidence of foci of infection, the foci were removed, but in such cases sufficient time was allowed to elapse to make it possible to evaluate the result of such measures before specific treatment was started. In the great majority of patients, all obvious foci of infection had been removed before they came under our care. Six of the patients were treated by orthopedic means following the use of the iodoxybenzoic acid for the correction of permanent deformities. This does not include those cases which had previously been treated orthopedically, without relief or with partial relief. No special diet was provided, except that those patients who were underweight were given a liberal general diet in an attempt to improve their state of nutrition.

The drug was prepared for administration as follows: One gram of the free acid was placed in a beaker containing 50 cc. of sterile distilled water, to which ammonium hydroxide was carefully added until it was just alkaline to litmus. Sufficient sterile distilled water was then added to make a total volume of 100 cc. (The solution may be stirred or warmed gently without danger of decomposition, but it should not be boiled nor allowed to stand for more than five hours after preparation.) It was given at body temperature, intravenously, by the gravity method over a period of not less than seven minutes.

Shortly after the administration of the drug was begun, the patients complained of a stinging sensation in the mucosa of the mouth and nose. This was followed by some lacrimation and in some cases sneezing. Several of the patients, especially children, became nauseated and some vomited. The extent and duration of this uncomfortable sensation varied with the individual patients from one-half hour to five or six hours.

Patients who had fever, especially the acute cases, usually experienced a chill followed by a rise of temperature of 3 or 4 degrees within from fifteen minutes to an hour after the drug had been given. A few patients with only a slight fever did not show this manifestation until after the second or third injection. It also appeared in a few of the patients who did not have any fever at the time the drug was given. We have looked on this as a favorable sign and also as a manifestation of the degree of activity of the infectious process. The temperature fell to normal within from six to twenty-four hours, and the patients volunteered the information that they felt better. This again is especially true of the acute cases. We have definite reasons for believing that this is not a nonspecific reaction similar to that produced by a foreign protein, since a large percentage of the patients who have improved under this treatment did not respond to foreign protein therapy, which had been instituted previously.

Ortho-iodoxybenzoic acid was given in gram doses (0.75 Gm. for children) at approximately biweekly intervals. Eleven of the patients received a total of six injections (6 Gm.); two, seven injections (7 Gm.); thirteen, eight injections (8 Gm.); seventeen of the patients received two or more courses of injections, making a total of from eight to twenty-five injections. In almost all patients receiving more than one course of the injections, the time between courses was approximately six weeks. In two instances, the second course was begun after a wait of only a few days. Those patients receving more than one course of treatment were naturally among the more severe forms treated.

Table 5.—*Types of Arthritis and Improvement Obtained After O-Iodoxybenzoic Acid Treatment*

Type	No. of Cases	Marked	Moderate	Slight	None
Gonorrheal	2	2	..	..	..
Acute	4	4	..	..	..
Hypertrophic	2	1	..	1	..
Atrophic					
(a) Simple atrophic arthritis	30	14	9	5	2
(b) Still's disease	5	3	1	..	1

RESULTS OF TREATMENT

A general summary of the results of the treatment, as given in tables 2, 3, 4 and 5, shows that of the forty-three patients treated twenty-four, or 56 per cent, were markedly improved; ten, or 23 per cent, moderately improved, six, or 14 per cent, slightly improved, and three, or 7 per cent, showed no improvement. Improvement is taken to mean a loss or diminution of pain, a loss or decrease in the swelling, an increase in range of motion, loss of stiffness, increase in function of the joints, and an improvement in the general health as manifested by a disappearance of fever, gain in weight, appetite, color, strength, and general well being. In judging the improvement that has been gained, one must take into consideration the condition of the patient at the time of entrance to the hospital. For instance, several of our patients at the time of admission were helpless cripples. They could not feed themselves, and some showed such involvement of the temporomandibular joint that it was impossible for them to take solid food. Many were also unable to walk and were in severe pain. In such patients, the relief from pain, the regaining of sufficient motion of the joints of the hands, elbows and shoulders so that they could feed themselves, and sufficient improvement in the lower extremities so that they could walk with crutches, are considered a vast improvement for the individual patient. It is evident, therefore, that the degree of improvement reported must necessarily be a personal factor with each patient.

A more detailed consideration of the various groups shows that of the four patients with the acute or subacute form of the disease all showed marked improvement or complete recovery (table 2). Among the chronic cases, one patient had had the disease for from six months to a year, and he showed moderate improvement. Of nine who had had the disease from one to two years, seven were markedly improved; one slightly improved, and one showed no improvement. Of nine patients with a duration of the disease from two to five years, six showed marked improvement, two moderate improvement, and one slight improvement. Of nine patients with a duration from five to ten years, five were markedly improved, two moderately, and two slightly improved. Of eleven patients with a duration over ten years, two showed marked improvement, five moderate, two slight, and two no improvement. Of the men, twenty, or 83 per cent, showed moderate to marked improvement, and four, or 16 per cent, slight or no improvement. Of the women, fourteen, or 73 per cent, showed moderate to marked improvement, and five, or 26 per cent, showed slight or no improvement. As regards age, of the thirteen patients under 30, nine, or 69 per cent, showed marked improvement; three, or 23 per cent, showed moderate, and one, or 8 per cent, showed slight improvement. Of the twenty-three patients between 30 and 50, ten, or 43 per cent, showed marked, six, or 25 per cent, showed moderate, five, or 21 per cent, showed slight, and two, or 8 per cent, no improvement. Of the seven patients who were over 50, five, or 71 per cent, showed marked, and two, or 28 per cent, showed moderate improvement.

Both patients in whom the process was thought to be gonorrheal in origin showed marked improvement. One of the patients who exhibited marked hypertrophic changes showed marked, the other only slight, improvement. Of the five patients with Still's disease, three showed marked improvement, one moderate improvement, and in one case no improvement was noted. However, the latter patient had received only five weekly treatments when he developed pneumonia, and the treatments were stopped.

The most interesting and important grouping of the cases is that based on the severity of the process and the degree of crippling and loss of function (table 4). A survey of the results as it affects the various groups thus classified shows that the four patients who were without crippling or deformity of a permanent or semipermanent nature, that is, crippling other than that due to the mere pain and swelling, all showed marked improvement. In a similar fashion, the three patients with slight crippling were all markedly improved. Eleven patients presented moderate crippling and deformity, and of these, six showed marked improvement, four moderate improvement, and one slight improvement. The majority (twenty-one) of the patients of the chronic group showed marked crippling, sufficient in most cases to make them helpless invalids, and in many cases causing them to lead an absolutely dependent life, confined to their beds. Of this group, seven showed marked improvement, six showed moderate improvement, five, slight improvement, and no improvement was obtained in three.

The relation of the number of treatments to the results is shown as follows: Of the eleven patients receiving six treatments, eight showed marked improvement, three moderate, and one no improvement. Of the two patients receiving seven treatments, one showed moderate and one, slight improvement. Of the thirteen receiving eight injections, six were markedly, four moderately, and two slightly improved, while one showed no improvement. Finally, of the seventeen patients receiving two or more courses of treatment for a total of from eight to twenty-five injections, ten were markedly, four moderately and three slightly improved. However, it should be remembered that this group was composed of the patients showing the greatest degree of crippling and deformity.

The classification of the foregoing results has been based on an observation of these cases, ranging from a period of from three months to three years. Fourteen of the patients have been observed for three months, twelve for six months, three for nine months, nine for twelve months, three for eighteen months, and two for three years.

UNUSUAL REACTIONS AND UNTOWARD RESULTS

Reactions, other than the ordinary reactions mentioned above, were very infrequent. Among the earlier patients treated, the sodium salt employed was responsible for frequent thrombosis of the vein used for the injection; it constituted an unpleasant and annoying objection to the use of the drug and persisted in spite of the careful venipuncture and washing the drug in with saline solution. The use more recently of the ammonium salt has prevented this unpleasant occurrence to a great degree, although not entirely. With both the sodium and the ammonium salts, a definite idiosyncrasy with regard to this was noted, some patients being able to receive the entire course of injections in a single vein, and others developing a thrombosis with nearly every injection. Four of the patients developed a marked erythematous reaction at the site of injection after the first few treatments, which gradually increased until in three of them it became more or less general at each treatment. In some cases the erythema was seen to follow the course of the vein, although it was not related definitely to any error in the technic of the venipuncture. No distressing subjective symptoms were noted, and there were no apparent ill effects from this type of reaction.

One patient (not included in the series) died some twenty-four hours after receiving the third injection. The injection preceding death was not associated with any unusual type of reaction, nor were those previously given. From twelve to fourteen hours after injection, the patient suddenly developed a marked dyspnea, became cyanotic, and a purpuric rash appeared on the face. She improved rapidly with the administration of oxygen and use of stimulants, and had apparently recovered from the attack, when about twelve hours later she died suddenly. Permission for a necropsy was refused. However, a roentgenogram taken after death revealed the presence of an enlarged thymus. A history of repeated previous attacks of a similar nature obtained from the physician, together with the absence of any factors suggesting a relation between the drug and the death other than that of a simple time relationship, makes us certain that there was no causal relation between the use of the drug and the fatal result.

COMMENT

Certain features of the results obtained by the use of this drug in the treatment of arthritis requires a more extended discussion than the brief summary given above. In the first place, a consideration of the results as stated clearly shows that the factors of age, sex and duration of the disease have but little bearing on the effect of the treatment. It is true that less improvement was obtained in the group that had had the disease over a long period of time. It is evident, however, that this apparent influence is merely because of the fact that, in general, those having the disease for a longer time are liable to have a greater degree of crippling and loss of function than those in whom the disease is more recent. In other words, important factors influencing the result of treatment are the severity of the disease and the degree of deformity and crippling, with the loss of function they have occasioned. Mere age of the process is not the determining factor, and some of those who had had the disease for years without developing any marked deformity responded as well to treatment as did those in whom the disease had been present only a short time. It is of interest to note that those patients in whom the process showed but little sign of activity seemed to respond less well to treatment than did those showing a more active process (case 3). It is important to note also that the evidences of activity bore no necessary relation to the duration of the disease.

No definite conclusions can be drawn as to comparative response to treatment of the two main clinical types of arthritis, namely, the hypertrophic and the atrophic varieties, since too few of the hypertrophic group have been treated. Two of the subgroups are, however, of particular interest. It will be noted that the two patients in whom the disease was considered of gonorrheal origin showed marked improvement. This improvement was all the more marked in patient 4, who had had the disease for six years, and who in addition to the arthritis had a very marked gonorrheal keratosis. There was such marked impairment of his general health that his condition was considered exceedingly poor. However, treatment was followed by a marked improvement, as shown by the fact that the temperature became normal. There was loss of pain and swelling in the joints to such an extent that they responded quite readily to orthopedic measures, and the general condition was improved, as shown by increase in appetite and weight, improved color and mental condition. The skin condition also showed a marked improvement.

The group of patients with the form known as Still's disease is of great interest. All but one had had the disease for five years or more, and all showed marked crippling. Of these five, three were markedly improved (case 2), and one moderately improved. The latter patient is particularly interesting, since he had had the disease for more than twenty years, and there was no apparent activity in his joints or evidence of other foci of infection. In view of the fact that it has already been stated that response to the drug is in a considerable measure dependent on the activity of the disease, possible existence of a low grade activity in this group over a long period and without symptoms becomes apparent.

Our results show that the most important factor influencing the effect of the treatment lies in the degree of anatomic deformity, crippling and loss of function, and that it is in this group with the most marked changes that the greatest number of failures have occurred. That this must be the case is obvious, since it is futile to believe that drug therapy can undo or change serious and permanent anatomic deformities of this nature, or cause the regeneration of muscle hopelessly atrophied. In this connection, however, one finds a number of patients with apparently permanent deformities whose response to the drug showed that the deformities were not of the permanent character they had been supposed to be. It is this group, too, in whom the combination of orthopedic procedures with drug therapy is necessary. Many of these patients had been treated by orthopedic methods with incomplete or unsatisfactory results, and in some of them the use of the drug had made a marked additional improvement (case 1). Other patients were treated orthopedically following the use of iodoxybenzoic acid with a further improvement in the function of the parts involved. There is evidence also that, in this group, not only was the drug of benefit in making the orthopedic treatment easier and of greater value, but further, that in some instances it was the use of the drug which made the operative procedures possible by stopping the active process (cases 4 and 6). However, in these cases the use of the drug therapy and of orthopedic treatment were separately employed, and therefore no confusion exists in the interpretation of the importance of the results attributable to each of the two methods.

A consideration of the improvement resulting in some of the patients receiving more than one course of injections, most of these cases were of a severe type, suggests that some of the failures may have been due to insufficient treatment. Early in the course of the work, the importance of the prolonged treatment was perhaps not sufficiently appreciated, and as experience was gained the importance of this factor became apparent. In some cases, however, lack of cooperation on the part of the patient was responsible for the failure to continue the treatment for a sufficient length of time.

Attention should be called to the continued improvement which may occur long after the course of treatment has been finished. This is well illustrated in case 1, in which the patient has continued to improve steadily, although the last treatment was given nearly a year ago. In general, some improvement occurs after the third or fourth treatment. In some instances, improvement is delayed until nearly a whole course of treatment has been given and, rarely, no improvement has been seen until after the second course has been begun.

A further feature of the result of the treatment with this drug is worthy of interest. We refer to the improvement in the general health of the patients treated. This has been striking in many cases and is shown by a gain in weight, appetite, strength, and an improvement in color and in the mental attitude of the patient.

We cannot overemphasize the value of the cooperation between the physician and the orthopedic surgeon. It is also important to see that the patients receive the proper after-care, such as good nourishment and a proper period of rest before returning to work, and measures should be taken to prevent them from pursuing any occupation that will add an undue amount of strain to the already weakened joints.

CONCLUSIONS

It is important that some statement should be made relative to our attitude toward the results of the work here reported. We are acquainted with the natural history of the disease and recognize clearly the tendency to remissions and the undoubted occurrence of spontaneous recovery. We are also aware that improvement or apparent cure may follow a variety of other forms of treatment. We fully appreciate the psychic effect of any new form of treatment that may be used in an attempt to benefit these chronic sufferers. We believe that it will never be possible with a single drug to cure a patient with arthritis who has developed permanent deformity and crippling, and that the proper treatment is a combination of methods, including the use of prophylactic and curative orthopedic procedures, the removal of foci of infection, and general hygienic measures, as well as drug therapy. Each patient is an individual problem and requires close observation, persistent treatment, and careful consideration. Final evaluation of the success of the treatment reported here must await a longer period of observation of treated patients and of end results. Success with this treatment may be considered established when it is shown that by its use, singly or in combination with other procedures, better results are obtained than by the use of other treatments, or by a combination of treatments. It is probable that our results as reported here will be changed by time, and patients reported now as improved may later return, having lost the improvement. On the other hand, patients who have not as yet shown improvement may later show more beneficial results of the treatment. However, it is important, we feel, to distinguish between an exacerbation of the disease and a reinfection or a return of the disease, which is made very possible by the existence of injured tissues in which resistance may well be considered to be lowered. It is in this connection that after-care is important.

REPORT OF CASES

Case 1.—C. S., a schoolgirl, aged 18, entered the hospital, June 12, 1924, complaining of deformities of the joints. The onset had occurred three years previously, following "influenza," measles and whooping cough. The feet, hands, elbows, and knees became swollen, tender, painful and hot. These symptoms subsided somewhat, leaving deformities of these joints.

Examination showed marked emaciation. The joints of the feet and hands, the wrists, ankles, elbows, and knees were swollen and painful. The feet were in valgus position. There was a flexion contracture of the left knee at 40 degrees, the right at 20 degrees. The wrists were held in flexion, and the hands showed ulnar deviation. The right elbow was fixed in flexion. There was considerable muscular atrophy. The blood showed a moderate secondary anemia. Roentgenograms of the knees gave evidence of an atrophic arthritis, with osteoporosis and a thickening of the synovial membrane. There was a chronic pansinusitis.

The patient was treated for about one year by the use of Lovett plasters, braces, and physiotherapy, with little improvement. Treatment with sodium iodoxybenzoate was begun, April 7, 1925, at which time she was barely able to walk with the aid of braces and crutches. She received six injections (a total of 5.4 Gm.), the last dose being given, May 14. Improvement was noted after the second injection and has continued steadily. At the present time, she walks without crutches or braces, ascends and descends stairs, and gets in and out of an automobile without assistance. There is marked increase in motion of the wrists, hands and right elbow, and the patient is doing housework. There has been a marked gain in weight and strength.

Case 2.—J. E. B., a schoolboy, aged 10, entered the hospital, Sept. 17, 1924, complaining of swelling of the joints. The onset had occurred seven years before, following pneumonia, with pain in the wrists, ankles, knees, and hips. The symptoms gradually disappeared, except the pain in the left hip. Three months before admission, the left knee became swollen and painful, and this was followed by involvment of the right knee, shoulders, wrists, hands, neck, and elbows.

Examination showed a loss of weight. The knees were swollen, tender, painful, and could not be extended beyond a right angle. Wrists, ankles, elbows, hands, and cervical vertebrae were similarly affected, with the elbows fixed in partial flexion. There was marked muscular atrophy. Roentgenograms of the affected joints revealed rather marked osteoporosis. The patient was treated with salicylates, nonspecific protein shock, and physiotherapy, with little relief, and continued to exhibit a persistent, irregular fever. Treatment with sodium iodoxybenzoate was begun, Jan. 17, 1925, and he received seventeen injections, a total of 15 Gm. The last treatment was given, March 4, 1925. Improvement was prompt and marked. Pain was relieved; there was a decrease in the swelling, and an increased range in motion to practically normal. The patient became able to walk. March 16, a tonsillectomy was performed, and the patient died suddenly while being returned from the operating room.

At necropsy, the pathologic diagnosis was acute cardiac death; rightsided cardiac dilatation with relative tricuspid and pulmonary insufficiency; acute pulmonary stasis and edema, edema of the meninges and brain; generalized acute edema (postoperative tonsillectomy); chronic fibrinopurulent productive polyarthritis of low virulence (Still's disease); synechia cordis; old adhesive pleuritis; old pyelitis and healed cystitis; subacute tubular nephritis; diffuse catarrhal gastro-enteritis; atrophy, passive congestion, and parenchymatous degeneration of all organs; generalized lymphoid hyperplasia; atrophic thymus, hypoplasia of the suprarenals; hypertrichosis; colloid goiter.

In the right knee joint were found chronic fibrinopurulent inflammation, fibrosis, fatty infiltration and serous atrophy. A fibrinopurulent exudate was present on the surface of the thickened synovial membrane. There were numerous plasma cells beneath the synovial membrane.

The heart muscle was poorly developed. A slight Zenker's necrosis was present. An increase of leukocytes in the small coronary vessels could be seen. There was localized edema, but no inflammatory infiltrations. There were localized scleroses of the epicardium and no active inflammation of the pericardium. Localized subepicardial fatty infiltration, with old adhesions between epicardium and pericardium, edema, and serous atrophy were present. There was a slight increase in the wandering cells, but no definite inflammatory focus. In the kidneys were an old, nearly healed pyelitis, and thickening of the pelvic submucosa. Other kidney findings were: localized inflammatory infiltrations; chronic congestion and edema; serous atrophy of the adipose tissue and numerous localized inflammatory areas in the cortex, with tubal atrophy and cloudy swelling, the glomeruli being well preserved. The picture was that of a moderate subacute tubular nephritis.

Case 3.—Mrs. A. E., a housewife, aged 39, entered the hospital, July 15, 1925, complaining of pain and tenderness in the joints. The onset had occurred ten years previously. Following a miscarriage, she developed pain, tenderness, and swelling of the right toe. During the next three years, the process spread, rapidly involving the right knee, ankle, shoulders and wrists. The remaining joints then became involved more gradually. Tonsillitis had occurred nine years previously, and had been followed by tonsillectomy. Cystitis had occurred six years previously.

Examination showed marked emaciation. The patient was confined to bed, a helpless cripple. The joints of the hands, the wrists, ankles, knees and elbows were enlarged, painful, but not hot or tender. The right knee showed about 5 degrees of motion. There was marked restriction of motion in the hands, wrists, elbows, and shoulders. The hands showed ulnar deviation. There was no swelling of the periarterial tissues but, in spite of the lack of signs of an active infection, there was a constant, severe pain in all joints, and muscle atrophy was marked. Roentgenograms showed an atrophic arthritis with generalized osteoporosis, obliteration of the joint spaces and subluxation of the carpal bones, radius and ulna at the elbows and the right tibia at the knee. There was a moderate secondary anemia and a slight leukocytosis. The patient had previously been given a great variety of treatments without relief. She was given six injections of sodium ortho-iodoxybenzoate (a total of 6 Gm.) over a period of four weeks, the last dose being given, Oct. 14, 1925. No improvement was noted.

Case 4.—G. S., a schoolboy, aged 12, entered the hospital, March 12, 1925, complaining of sore legs and hips. The onset of arthritis had occurred three years previously, some three months after an attack of gonorrheal urethritis. He first noticed a painful, swollen, reddened knuckle on his right hand. The hips soon became similarly involved, and these symptoms persisted, until a year before admission, when the process involved the hands, wrists, ankles, elbows and knees. The joints were swollen, tender, painful and hot; motion was restricted, and various contractures and deformities developed. The patient lost a great deal of weight, had a continuous fever, and was confined to a chair.

The boy was very emaciated, with marked pain and tenderness in the right hip. There was an abduction flexion contracture of the right hip and a marked adduction flexion contracture of the left hip, with a definite tendency to luxation of the head of the femur. Both knee joints were swollen and tender, with a fixation in flexion at about 60 degrees. The joints of the hands, wrists, and elbows were swollen and tender, with a considerable restriction of motion. There was a sacral ulcus decubitus. Roentgenologic examination was difficult because of the marked deformities. It showed marked osteoporosis and loss of joint space, suggestive of atrophic infectious arthritis, possibly gonorrheal. Later films showed a pathologic fracture of the right femur, probably due to the marked thinning of the cortex.

The boy was treated by various orthopedic procedures and physiotherapy, with only temporary improvement. Some six months later, he developed a gonorrheal keratosis over his legs, and was transferred to the department of dermatology for treatment. The deformities were as marked as on admission, and the joints were so tender and painful as practically to prevent moving or touching the parts involved. Attempts at straightening the legs were impossible because of pain. Treatment with ammonium iodoxybenzoate was begun, Nov. 20, 1925, and he received two courses of six and seven injections, respectively, for a period of two weeks, for a total of 13 Gm. Improvement was prompt with a loss of pain and swelling of the joints, and an increased range of motion in the hands, wrists, elbows and hips. At the same time, there was a marked improvement in the skin condition and in the general health. With the loss of pain, attempts to straighten the knees became possible, and the patient is now being treated orthopedically for that purpose.

Case 5.—Mrs. P. B., a housewife, aged 40, entered the hospital, Jan. 26, 1926, complaining of severe pain in the shoulders. The onset had occurred suddenly ten days before, with stiffness of the legs. The following day, she noticed a severe pain in every joint of the body; the joints became swollen, hot and tender, and she was confined to bed. At the onset she had considerable fever, and several days later noticed a slight sore throat. She had had previous attacks of chills and fever, frequently with sore throat and tonsillitis.

The patient was lying in bed, and any attempt to move her was accompanied by very severe pain. Voluntary motion was practically impossible because of the pain. There was marked oral sepsis and dental caries. The tonsils were small and markedly inflamed. All the joints of the extremities were swollen, hot, and exceedingly painful on motion. There was some stiffness and pain in the spine. The temperature ranged around 101 F. Roentgenologic examination showed a mere swelling of the soft tissues. There was slight leukocytosis.

Treatment with ammonium iodoxybenzoate was begun, January 30, and the patient received eight injections, the last, February 27 (a total of 8 Gm.). There was marked improvement following the first injection, and following the second injection the patient was able to move about, and the temperature returned to normal. She was discharged without objective or subjective signs of the disease.

Case 6.—D. S., a man, aged 32, entered the hospital, June 24, 1925, complaining of stiffness of the joints. The onset had occurred thirteen years previously with an attack of pain, redness, and heat in all the joints, which lasted from three to four weeks. One year later, he had a similar attack, and following this the pain and stiffness progressed gradually and a slight swelling of all joints occurred. Two years later, the left hip became ankylosed, and he was treated orthopedically without improvement. The tonsils were removed at this time. Following this, nearly all of the joints, including the spine, became worse, and he gradually lost ground, all the joints becoming more painful, stiff and contracted. Eight teeth had been removed.

The patient was well developed and undernourished, and the examination gave essentially negative findings, aside from the joint condition. The spine was rigid and motion practically impossible, especially in the cervical region. The temporomandibular joints were painful, and the mouth could barely be opened a centimeter. There was marked pain and limitation of motion in the shoulders and elbows. The hips were ankylosed in a nearly completely extended position. The knees were swollen and tender, markedly limited in flexion, and could be extended to about 150 degrees. The right ankle and foot were tender and swollen, and greatly limited in motion. Roentgen-ray examination showed a marked hypertrophic arthritis of the vertebrae, hypertrophic changes in the right foot and ankle, and periarticular changes in the elbows.

Treatment with sodium iodoxybenzoate was begun, July 1, 1925, and the patient received eight injections over a period of four weeks (a total of 8 Gm.), the last dose being given, July 31. Improvement was noted following the second injection, and by the time the treatments were finished there was marked improvement, consisting of loss of pain and swelling, and an improvement in the range of motion in all joints except the hips. The mouth could be widely opened, and the motion of the neck had greatly increased.

In September, there was a slight return of the symptoms, and the patient received nine injections (from October 14 to November 13), with a complete return to his previously improved condition. Because of the marked disability caused by the ankylosis of both hips, he was transferred to the department of bone and joint surgery for operative correction of this deformity. Following this treatment, there was again a slight recurrence of the symptoms, which were easily controlled by eight injections of ammonium o-iodoxybenzoate (8 Gm.).

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CECIL AND ARCHER, AND YOUNG AND YOUMANS

Dr. E. E. Irons, Chicago: Chronic proliferative arthritis is no doubt often of infectious origin. Other cases fall into the class of arthritis deformans. Between these two groups are cases in which the joint changes suggest arthritis deformans but in which there is also a fairly well marked, possibly contributing, infectious etiology. Such cases make it difficult to place arthritis deformans solely in the infectious or in the less well defined metabolic group. These cases raise the question whether we should not consider the soil as well as the seed. In certain families, there is a history of arthritis through several generations, or in mother, daughter or sister. In recurrent arthritis of infectious origin, there is a continuing contest between the reinvasions of the joints and the forces of repair. There are further introduced the factors of trauma, weight bearing and muscle tension, so that in those persons whose joint tissues have a reduced power of repair, lesions of joints are more likely to go on to greater deformity than in those endowed with greater tissue resistance to injury. The presence or absence of a normal degree of tissue resistance may well determine the types that arthritis may assume from the same degree of injury or infection in different persons. Dr. Cecil has emphasized the necessity of removal of chronic infections. Measures taken to this end should, however, be considered after a thorough examination of each patient. Thoughtless and ruthless dental and surgical intervention is often destructive rather than helpful. In iritis, whose infectious mechanism appears to be similar to that of arthritis, with which it is often associated, the removal of infections seems to have a definite effect in preventing recurrences. The relative frequency of the several sites of infection in iritis is approximately the same as that found by Dr. Cecil in his cases of arthritis. In arthritis, as well as in iritis, nonvenereal infection of the prostate is frequently overlooked. General and local measures to improve the physical condition of the patient are important. Thyroid substance has been of apparent benefit in many cases. It is of interest that in the lake region we have many cases of hyperthyroidism and many cases of arthritis, but their occurrence together is extremely rare. With the possible exception of gonococcal arthritis, the use of vaccines seems to be of doubtful value. Dr. Billings, some years ago, felt that no appreciable benefit was obtained from their use. The results obtained from the use of o-iodoxybenzoic acid by Drs. Young and Youmans are of great interest. We should await further experience before attempting to evaluate this method of treatment.

Dr. Ralph Pemberton, Philadelphia: The remarks of Drs. Young and Youmans have interested me, especially because many years ago I followed the work of Amberg and Knox in their experiments with o-iodoxybenzoic acid. They found that this or a closely related substance had some potential, through its oxidative capacity, to further reparative processes and to delay destructive processes. This may afford part of the explanation of the results just cited, but I think Dr. Young is very wise in withholding any large claims until these should be justified by extensive trial. The outstanding feature of Dr. Cecil's paper is the broadminded view he takes of arthritis as a whole. I differ somewhat with him, however, in that the atrophic type of arthritis may often be apparently free from foci and the patient may get well along quite different lines. He has wisely stressed the importance of considering the menopause as a factor more operative, in many women, than is focal infection. I fully agree with him as to the great value of a low calory diet in treating this group, but the reduction of weight sometimes entailed constitutes only a small part of the beneficial influences; as can be well seen in bedridden cases or those involving only the non-weight-bearing parts. I endorse Dr. Irons' remarks regarding the influence of heredity. I am convinced that the cart is sometimes placed before the horse and that focal infection may sometimes be the result of a systemic imbalance as well as the cause of it. His statistical observations on the rarity of arthritis with hyperthyroid conditions in certain sections is in keeping with the evidences my associates and I have adduced showing the favorable influence of measures that improve metabolism and blood flow.

DR. J. B. YOUMANS, Ann Arbor, Mich.: Dr. Young and I feel that the results from the use of o-idoxybenzoic acid are very promising, but the drug should have further use over a longer period and in the hands of other workers before a final evaluation can be placed on its usefulness in the treatment of chronic arthritis. In addition, let me also add that it is not a cure-all, that we feel no single drug can ever "cure" a patient with advanced chronic arthritis with marked anatomic changes; that every case is a problem in itself, to be treated individually, as the circumstances indicate. We have refrained from using additional treatment in connection with the use of o-iodoxybenzoic acid, in order that we might evaluate the results obtained with it alone; but it is undoubtedly true that for treatment as ordinarily considered, one should, in addition to the use of the drug, employ any other measure that may be useful in helping the patient. Regarding the circulatory changes in chronic arthritis, Dr. Young and I feel that the iodoxy radical may play a certain part in influencing the circulatory changes which Dr. Pemberton has shown to exist in this condition.

DR. P. S. HENCH, Rochester, Minn.: Through the courtesy of Drs. Young and Youmans we have been able to use o-iodoxybenzoic acid on a few patients so far. Our preliminary impression is that in three cases there was no distinct improvement. In two cases there was some possible improvement, and one patient seemed to derive definite benefits. There are three possible reasons why o-iodoxybenzoic acid might be of value. Dr. Pemberton has mentioned one; namely, that it may raise the oxidative process of the body and act as an oxidizing antiseptic. A second reason might be its iodine content. Various iodide preparations have been used in arthritis for a long time, frequently apparently with distinct benefit. Discussing this point recently with Dr. Lowenhart, I was informed that when the iodine content of this compound was increased at the expense of the available oxygen content, the antiseptic value was diminished rather than increased. A third reason might be simply from its action as a nonspecific counterirritant, like typhoid vaccine and other foreign proteins and substances. We have used mercurochrome-220 soluble with some results—mostly disappointing. In considering results of this treatment, we must remember that the action of this drug may not be a specific one but that the benefits, if any, may be due solely to the response on the part of the body against the foreign substance. I hope Dr. Young will be able to give us more definite information regarding the exact mode of action of this drug, which should certainly be given a very thorough trial under carefully controlled conditions.

DR. RUSSELL L. CECIL, New York: There is one point in connection with infectious arthritis that I failed to bring out: A rather interesting relationship could be established between the duration of the arthritis and the time when foci were removed. In cases of infectious arthritis in which the focus was removed within six months after the onset of arthritic symptoms, the percentage of patients who recovered or were much improved was 82; while in patients in whom the symptoms had lasted a year, two years, three years or four years, the percentage relieved by removing foci was gradually decreased; and those subjected to removal of foci after five or six years rarely ever showed any definite or permanent improvement. How do I recognize a diseased tonsil? In this category I would place the large red tonsil, the suppurating tonsil, the tonsil with pus in its crypts, the small red tonsil with adhesions and the scarred tonsil, which, of course, is always under suspicion. I would suspect any tonsil in a patient with infectious arthritis and free from other foci. Time and again we have removed apparently healthy tonsils and have achieved good results—so much so that we now often take out apparently normal tonsils in patients with the proliferative type of arthritis. I was interested in what Dr. Pemberton had to say about the relation of the circulation to arthritis. I think such a conception might throw some light on the etiology of the degenerative type of arthritis. These changes in the joints of middle aged or elderly persons seem to be analogous to the well known degenerative changes in the blood vessels and kidneys. Dr. Pemberton is a little bit dubious about the possibility of drawing a sharp line between these two great groups of arthritis. After working with a good many cases, I feel that the distinction can usually be made, but I must admit that there is a small group of cases (twenty or twenty-five in our series) in which apparently a middle-aged person with degenerative arthritis has picked up an infectious arthritis too. Another thing which should be remembered is that an infectious arthritis of long duration often shows bony changes; this, however, occurs late in the disease. During the first year the infectious type rarely shows bony changes, but the degenerative type exhibits lipping and spur formation early.

DR. A. G. YOUNG, Ann Arbor, Mich.: This drug is not on the market, since it has not been used clinically before. Dr. Tabern of the Department of Chemistry has supplied us. We have not been able to obtain it in large amounts, and that is why it has not been supplied to other clinicians earlier. At present, it is in the hands of various men in different parts of the country. I think it will be available in May through some chemical supply house. The free acid must be neutralized, and we have used the ammonium salt in preference to the sodium salt since it does not produce thrombosis so readily. Any one receiving it will receive minute instructions for its use. In regard to Dr. Hench's question concerning oxygen capacity: We know that the oxygen attached to the iodine is partly responsible for the action of the drug, but not that alone; because if sodium iodide, which has the same linkage as far as the iodine and oxygen are concerned, is given, there are no effects. Also, the fact that the iodo compound without the oxygen attached to the iodine is of no value shows that the iodine alone cannot be the responsible factor. In regard to nonspecific action: In some cases there are noted chills and fever, while in others there is no reaction. Improvement is obtained under both conditions. It will depend on our idea of what constitutes a nonspecific reaction. If you are thinking of protein therapy, I would say, No. The drug appears to be germicidal for certain streptococci, staphylococci and some bacilli, while it has no action against certain other organisms, such as pneumococci. It is not a foreign protein reaction, I am sure, for this reason: I have taken this drug a number of times; I have never experienced a chill and fever, but if I give it to a patient who has a slight fever, within a short time he will have a chill and rise of temperature.

Cerebrospinal Fluid.—The most characteristic feature of the cerebrospinal fluid as it exudes from the choroid plexuses is its remarkably low solid content. It is by far the most watery secretion produced by the normal body, and one might almost say it is an attempt by nature to secrete pure water. It contains a small amount of the diffusible substances of the blood, but practically nothing else. So strong is the tendency to keep the fluid watery that the choroid plexuses have a truly astonishing impenetrability to drugs and other foreign substances circulating in the blood.—Trotter, Wilfred: *Lancet,* July 17, 1926.

Clinical Notes, Suggestions and New Instruments

QUADRICEPS TEST FOR THE MYASTHENIA OF THYROIDISM

Frank H. Lahey, M.D., Boston

The test described here has been of considerable value in diagnosis of hyperthyroidism based on the well established weakness of the quadriceps femoris in this disease.

The patient sits well forward on the edge of a straight chair and holds the leg out at right angles to the body. In very few cases of thyroidism of any marked degree of intensity will it be possible for one to maintain the leg in this position more than twenty-five or thirty seconds, while in the majority of cases not affected by thyroidism the leg can, with any real effort, be held in this position for approximately one minute.

We have applied this test to between one and two hundred patients, some of whom were suffering from thyroid disease and others not.

Statistical data will be published later.

605 Commonwealth Avenue.

SINUS PERICRANII

J. E. Engstad, M.D., Grand Forks, N. D.

A. A., a woman, aged 20, weighing 71 kg., of florid complexion and enjoying excellent health, with negative family history, had a marked protuberance a little to the left of the outer elevation of the left frontal bone, almost circular in outline and about 1 cm. in diameter, which increased in size if she bent her head downward or when in a prone position. No pulsations were felt. To the tactile sense it felt soft and doughy, akin to a soft flattened cyst or fatty tumor. It had been observed for a number of years but had not shown any tendency to enlargement up to within six months, when its growth became quite rapid. It was not painful to manipulation nor did the young woman complain of any inconvenience from the growth except its disfiguring effect.

The diagnosis was sinus pericranii or incipient cerebral hernia.

Under local anesthesia a Greek cross incision was made through the integument, when a large mass of varicose veins was encountered. These were carefully separated from the connective tissue and ligated near the constriction, and the wound was closed. After a period of six months the patient again presented herself, as the disfigurement was greater than before. The bony foramen had markedly increased in size. Under local anesthesia another operation was performed. The mass was ligated a quarter of an inch from the pedicle; it was replaced in the sinus, this opening was reenforced by four or five silver thread sutures through the periosteum, and the wound was closed as before. The patient made a rapid and uninterrupted recovery and was discharged as cured.

Another year passed when she again presented herself, and the growth had markedly increased in diameter if not in height. The bony opening was larger than found at the last operation. She was most anxious to be operated on again, as both the disfigurement from the tumor and the scar disturbed her peace of mind to an unwarranted extent.

A dental laboratory rolled out a piece of 24 carat, 36 gage gold to the desired thinness but with sufficient strength to support the weakened bony structure. Careful measurements were made of the sinus opening in the bone previous to the operation. The edges could be easily felt by exerting considerable pressure, which reduced the mass of varicose veins and arachnoid tissue into the cerebral cavity. Under general anesthesia the same Greek cross incision was again made, and the mass of varicose veins with exceedingly thin walls, which bled freely, together with a thin, veil-like structure which was thought to be part of the arachnoid, was separated in three parts and each gently ligated with fine silver wire on the level with the outer border of the bone. The structure of the bone for a distance of at least a quarter of an inch felt soft and spongy, more like a cartilage than a bony structure. It was gently enlarged horizontally, making the incision oblique in outline; then a piece of the gold plate was cut to fit this opening, with four holes through its edges at equal distances apart. The plate was introduced into the sinus and moved about 10 degrees from the longest diameter, where it firmly rested on the dura; and to keep it in position, four fine threads of silver wire which had previously been threaded through the perforations were anchored in the periosteum. A strip from the fascia lata large enough to cover the plate and the periosteum for half an inch around the fenestra were sutured to the periosteum with exceedingly fine silver wire sutures. No silk or catgut was used. The old scars were dissected out and the fresh edges reunited with silkworm sutures.

Firm starch bandages were applied over the dressings for a period of one month. The patient made a complete and permanent recovery without any recurrence for two years following the last operation. She has been out of my observation for a period of two or three years.

There has been no evidence of the cystic formation, which is nature's way of protecting the structures of the brain when any foreign substance or specula of bone from the inner plate impinges or irritates its delicate structures.

A SLIGHT IMPROVEMENT IN THE TECHNIC OF INTRA-UTERINE PACKING

Paul E. Spangler, M.D., Portland, Ore.

It occasionally becomes necessary during the course of an obstetric or surgical practice to pack the uterine cavity. It also occasionally occurs that more than one length of packing gauze is needed to fill the cavity. Unless difficulty is to be experienced in removing the gauze, it is essential that each successive strip of gauze be united firmly to the one that precedes it. In the past, the general practice has been to tie the ends of the strips together by means of the square knot. It has happened that, following the packing and after the physiologic contraction of the cervix, the large bulk of the knotted gauze so formed offers considerable resistance to easy removal. The difficulty so encountered has been so severe as to make necessary a general anesthetic and a minor operative procedure to secure adequate room for the removal of the gauze knot. It was to overcome this difficulty that the procedure described here was devised.

When the end of the first strip of gauze is approached, the second strip is started from its tube. In the beginning of the second strip, starting about an inch or two from the end and cutting away from the end, one cuts a longitudinal slit slightly longer than the width of the first gauze. Now, holding the beginning of the second strip flat, one brings the end of the first strip up through the slit in the second strip. Then the end of the first strip is passed round under the second strip and up over the opposite side to the slit. The end of the first strip is now passed down through the slit in the second strip in the opposite direction from its first passage through the slit. The loop thus formed is now set by firm tension on all three ends. The two limbs of the first strip are now grasped in sponge forceps, and the whole union is introduced into the uterine cavity as with the single strip of gauze. Care is taken to make sure that the open end of the V formed by the first strip is directed toward the fundus of the uterus. The packing is completed in the usual manner. Additional strips may be united in the same manner as needed.

The advantages of this procedure are that the union between the strips of gauze is strong and will not slip; when the gauze is removed, the union is soft and pliable and forms a soft, yielding gauze wedge that is easily removed from the uterus, replacing the firm, unyielding knot that is present if the ends are simply knotted together. If the knots have given one difficulty, this simple but effective procedure should be tried.

922 Corbett Building.

Special Article

THE TECHNIC OF MEDICATION

A SERIES OF ARTICLES ON THE METHODS OF PRESCRIBING AND PREPARING, THE INDICATIONS FOR, AND THE USES OF VARIOUS MEDICAMENTS *

BERNARD FANTUS, M.D.
Associate Clinical Professor of Medicine, Rush Medical College
CHICAGO

(Concluded from page 671)

SUBARACHNOID INJECTION

Lumbar Injection.—The needle must be from 3 to 3½ inches long, and should be provided with a removable stilet. As "puncture headache" is believed to be due to excessive leakage of cerebrospinal fluid through a tear in the meninges inflicted by the needle, Greene [196] advocates for this purpose a 22 gage needle with a round, tapering, sharp point. By means of this needle he has done lumbar punctures with a headache incidence of less than 1 per cent. Nearly all these punctures were done in the office, and the patients allowed to go home to lie down. Many of the patients, however, did not do this but resumed their work.

Another item of importance in the prevention of puncture headaches is to keep the patient perfectly motionless while the needle is in the dural sac, for movements of the head, neck and spine are transmitted to the spinal dural sac in the lumbar region, and if these occur while the needle is in place, an excessively large tear will result. Should movement occur, a small needle is more likely to bend. For this reason it is also safer, because it does not break as readily as a large caliber rigid needle. However, a wide rather than a narrow lumen needle is required when lumbar injection of serum is to be practiced in meningitis, as a narrow lumen needle is more liable to become plugged with exudate. The patient may be seated with his body well curved forward, so as to widen the intervertebral spaces as much as possible, or he may lie on his side near the edge of the bed, with his knees drawn up and the body arched foreward. The preferred point of puncture is the interspace between the third and fourth lumbar vertebrae, which is best found by Jacoby's rule: The line connecting the highest points of the iliac crests cuts the spinous process of the fourth lumbar vertebra. The needle is introduced between this and the next higher process.

The skin is sterilized with tincture of iodine, washed off with alcohol, and anesthetized if desired with a few drops of 1 per cent procaine hydrochloride solution. The needle is gripped firmly and inserted exactly in the median line, and straight forward or slightly upward. The thrust should be sufficiently vigorous to push the needle through the skin and muscles into the spinous ligaments; it should then be inserted more slowly and deliberately until a sudden cessation of the resistance indicates that the canal has been entered. The stilet is now withdrawn, and the appearance of spinal fluid is the sign that the subarachnoid space has been actually reached. This usually occurs at a depth of about 2½ to 3 inches in the adult, of from one-half to 1 inch in the child. Should the needle strike bone, it is slightly withdrawn and then reinserted in a somewhat different direction.

If, when the stilet is withdrawn, no fluid appears, one may have the patient take a deep breath. If this does not bring fluid, the stilet is reinserted to dislodge any possible occluding material. If still no fluid appears when the stilet is removed, the needle may have been inserted too far and should be withdrawn a little; and then, if no result, advanced cautiously as it may not have entered the canal. It is occasionally impossible to obtain any fluid, because it is too thick to flow through the needle. In case of "dry tap" if one is reasonably sure of having entered the canal, a small amount (from 3 to 5 cc.) of fluid may be carefully injected.

As soon as the spinal fluid appears, it is well to measure its tension, which can be very simply done by attaching a sterile glass tube (preferably shaped like an inverted j) to the needle by means of a conical connecting piece and rubber tubing; and raising the glass tube until equilibrium is attained, the distance being measured with a rule. The glass tube is then gently lowered and fluid permitted to escape slowly and with occasional control of the height of pressure until the desired quantity has been removed or reduction of pressure to near the normal attained. If the fluid does not flow rapidly enough, one may have the patient count or strain somewhat.

After as much or more spinal fluid than the amount to be injected has been removed, the fluid to be administered, previously warmed to the body temperature (by means of a towel wrung out of hot water wrapped about the container), is permitted to run in slowly, about 1 cc. per minute, either from a completely filled syringe or preferably by gravity from a funnel. In the latter case, the tubing is allowed to fill with cerebrospinal fluid, so that no air is injected. If there is any doubt during the injection that the needle is still in the subarachnoid space, a little of the fluid should be aspirated and then reinjected. Should symptoms of collapse appear during an injection, some of the fluid within the canal should immediately be permitted to escape. Indeed, it is best to forestall collapse by watching the patient's blood pressure, and a total drop of about 20 mm. of mercury should be taken as an indication to stop the procedure, or at least to proceed with the greatest possible caution.

After completion of the injection, the needle is withdrawn quickly, and the wound covered with sterile gauze and adhesive plaster.

To lessen still further the liability to "puncture headache" Milian,[197] who is also convinced that oozing of the fluid through the gaping puncture hole is one of the factors in the disagreeable by-effects of lumbar puncture, advocates having the patient assume for ten minutes after the puncture the knee-chest position, the back curving inward. In this manner the formation of a clot over the puncture hole is favored. For the next twenty-four hours, it is best to have the patient lie on the abdomen, not the back, with the head kept lower than the pelvis by raising the foot of the bed with a brick. As previously stated, these precautions as to subsequent rest in bed are not always observed or necessary; and the [illegible] tion is dangerous in spinal anesthesia.

Cisternal Injection. [illegible] first described by Wege [illegible] cisterna magna, [illegible] Essick,[illegible] and more in detail by Ayer,[199] promises to become an important variety of subarachnoid injection in view of the fact that cistern puncture reaches the very distributing center of the cerebrospinal fluid system, for the fluid escaping here from the ventricles distributes itself over the hemispheres and the base of the brain, as well as the spinal cord. India ink injected here blackens the base of the brain as well as the cerebral cortex on both sides, while the same quantity of india ink injected into the lumbar sac barely blackens the base of the brain. Dandy[200] injected 1 cc. of india ink by cisternal puncture in the living animal and found it freely distributed throughout the most distant branches of the subarachnoid spaces of the cerebral hemispheres in less than one hour. When we realize that, in all probability, the cerebral rather than the spinal meninges are the earliest affected in meningitis, antimeningococcus serum ought to be most efficient when given by the cisternal route. Likewise, in view of the predilection of the syphilitic infection to attack the basal structures, cisternal injection of arsphenaminized serum ought to secure more direct access to the affected part than lumbar injection. Indeed, in all diffuse conditions, cisternal injection should be the method of choice. It should in some cases, at least, render intraventricular injection unnecessary. Cisternal puncture is especially demanded when it is necessary to reach the upper reservoirs of the cerebrospinal fluid system in cases of subarachnoid block.

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* This is the thirty sixth and final article in the series on "The Technic of Medication" In due time all the articles will be assembled in book form

196 Greene, H. M: Lumbar Puncture and the Prevention of Postpuncture Headache, J. A. M. A. 86: 391 (Feb. 6) 1926; Northwest Med. 22:240 (July) 1923.

197. Milian, G.: Paris

198. Wegeforth, Paul·
157:789 (June) 191

Von Sarbó[201] considers cisternal puncture preferable to lumbar puncture even for diagnostic purposes, because he finds it easier for the operator, less disagreeable to the patient during its performance, and practically free from undesirable after-effects. The latter fact is due to the negative pressure normally found on cisternal puncture in the sitting patient, so that after-leakage is not as liable to occur, provided the patient is kept in the sitting or almost sitting posture for some time after the puncture. When, in the sitting patient, cerebrospinal fluid appears without aspiration at the needle, it points to increased pressure, and is a sign in favor of organic disease. Von Sarbó finds roentgenoscopy after the cisternal injection of lipiodol more valuable in differential diagnosis than its lumbar injection. Normally this oil sinks to the sacral end of the dural sac. In case of subarachnoid block, it is detained at the level of the lesion.

Not only is combined lumbar and cisternal puncture useful for the diagnosis of spinal subarachnoid block by the difference in the composition of the two fluids and by an upsetting of the normal pressure relations above and below the obstruction, but it also may be of value in hastening the diffusion of remedies by creating a more active circulation of the fluid. As Pollock and Favill[202] point out, when we inject a drug or dye by lumbar puncture alone, it enters a space filled with incompressible fluid, and its spreading will depend on diffusion, which is slow, and must compete with absorption from the subarachnoid space, which is rapid. By combined puncture we can produce currents that will greatly increase the rapidity and degree of medication of the entire external cerebrospinal space.

Ayer[199] describes the technic as follows:

> The patient is placed on the side, as if for lumbar puncture, with the neck moderately flexed. Care is taken to maintain the alinement of the vertebral column to prevent scoliosis and torsion, and in cases in which comparative pressure readings are important, the lumbar and cisternal needles should be on the same horizontal plane. After antiseptic preparation of the skin, usually including the shaving of a little hair, and local anesthetization with procaine hydrochloride, the thumb of the left hand is placed on the spine of the axis, and the needle inserted in the midline just above the thumb. The needle may be pushed rapidly through the skin, but should then be cautiously and guardedly forced forward and upward in line with the external auditory meatus and glabella, until the dura is pierced. If the cisterna be entered at this angle there is usually a distance of from 2.5 to 3.0 cm. between dura and medulla, as shown on frozen sections; with the needle less oblique in position, the distance between the walls of the cisterna becomes progressively less. Therefore, it is good practice to aim a little higher than the auditory meatus, and, if the needle strikes the occiput, to depress just enough to pass the dura at its uppermost attachment to the foramen magnum. At its entrance, the same sudden "give" is felt as in lumbar puncture.
>
> The needle employed is a regular lumbar puncture needle, nickeloid, 18 gage preferred, with beveled stilet, sharp on the sides but not too sharply pointed. There is rather less variation in the depth of the tissue traversed than in the lumbar region, being in an ordinary sized adult from 4 to 5 cm., the greatest distance in the series being 6 cm. and the smallest 3.5 cm. It was found that a faint circular scratch on the needle, 6 cm. from the tip, was entirely satisfactory in judging the distance, and was preferable to the deeper markings of the Patrick needle, which tend to make its insertion a little jerky and consequently less guarded.

Von Sarbó[201] finds that the membrane is so thin at the point of puncture that it may be perforated without the sudden giving way. On account of the close venous plexus in this region, blood is likely to appear at the open end of the needle, which should not deter one from advancing a little farther (1 to 2 mm.) to puncture the dura and obtain clear fluid. He, like Ayer, desists, if no fluid is obtained at the depth of 6 cm., from inserting the needle any farther. Though he considers this method very simple in execution, he joins Ayer in warning any one from performing it on the living until he has practiced it on the cadaver.

Ventricle Injection.—When subarachnoid injection is made over one hemisphere, the material reaches the meninges covering it, the brain stem and the cerebellum, but is faintly and irregularly distributed over the opposite hemisphere and the spinal cord. Such injection should therefore never be attempted, for it is inferior in efficiency to cisternal injection, and is much more complicated in technic, requiring, as it does, trephining of the skull.

The only areas not well reached by cisternal injection are the cerebral ventricles, which are the center of secretion of the cerebrospinal fluid. Hence injection into the cerebral ventricles is indicated when signs and symptoms unmistakably point to involvement of these structures with a disease for which we have a specific remedy harmless to the nerve tissue. Schoenberg[203] makes the statement, and substantiates it by intravital staining, that intraventricular injection is the most direct way of reaching the optic nerves.

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[199] Ayer, J. B.: Puncture of Cisterna Magna, Arch. Neurol. & Psychiat. **4:** 529 (Nov.) 1920.

[200] Dandy, W. E.: The Treatment of Staphylococcus and Streptococcus Meningitis by Continuous Drainage of the Cisterna Magna, Surg. Gynec. Obst. **39:** 760 (Dec.) 1924.

[201] Von Sarbó, Arthur: Ueber Zisternenpunktion, Klin. Wchnschr. **5:** 84 (May 7) 1926.

[202] Pollock, L. J., and Favill, John: Intravertebral Treatment of Diseases of the Central Nervous System Exclusive of Cerebrospinal Syphilis, Arch. Neurol. & Psychiat. **14:** 66 (July) 1925.

[203] Schoenberg, M. J.: Intracranial Treatment of Syphilitic and Parasyphilitic Optic Nerve Affections, J. A. M. A. **66:** 2034 (June 24) 1916.

The technic of ventricle injection, which was first practiced by Cushing and Sladen,[204] is briefly outlined by Hammond and Sharpe[205] as follows:

> Under ether anesthesia, a small skin flap, slightly larger than the trephine used, is made a little in front of the bregma and 2.5 cm. from the sagittal sinus. A button of bone 1.5 cm. in diameter is removed and the dura incised. The slender cannula with blunt point is introduced at a point free from underlying cortical vessels, and passed downward and a little backward into the lateral ventricle. The head of the table is lowered, and from 10 to 20 cc. of fluid allowed to escape. The head of the table is now raised, and a funnel containing the serum is attached to the cannula by short rubber tubing. The fluid enters entirely by gravity and is very slowly introduced. The cannula is then withdrawn and the scalp wound sutured. In the second and subsequent injections the scalp over the trephine opening is infiltrated with procaine hydrochloride, and the ventricular injection is carried out as described above. As the brain is not sensitive, a general anesthetic is not required in second injections.

From this it is evident that this strictly surgical procedure should not be undertaken lightly, but also that it is sufficiently simple to be resorted to when definitely indicated.

New and Nonofficial Remedies

o-IODOXYBENZOIC ACID IN THE TREATMENT OF INFECTIOUS ARTHRITIS

Preliminary Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following preliminary report on the treatment of infectious arthritis with salts of *o*-iodoxybenzoic acid.

W. A. Puckner, Secretary.

In December, 1925, Drs. A. G. Young and J. B. Youmans presented a preliminary report on the treatment of infectious arthritis with *o*-iodoxybenzoic acid at a meeting of the American Society for Pharmacology and Experimental Therapeutics (*J. Pharmacol. & Exper. Therap.* **27**:252 [April] 1926). A detailed report was presented before the Section on Practice of Medicine at the session of the American Medical Association in April, 1926. This report (published in this issue, p. 746) included forty-three case reports and summarized the authors' work and conclusions.

Drs. Young and Youmans requested the Council to consider the evidence which they presented in their reports with a view to the eventual acceptance of *o*-iodoxybenzoic acid or its salts for New and Nonofficial Remedies. They supplied the Council with a specimen of the *o*-iodoxybenzoic acid from which they had prepared the salts that were administered in their work, and proposed some tests and standards which the acid should meet.

Young and Youmans report that they have treated forty-three cases of chronic arthritis of various types with *o*-iodoxybenzoic acid and that they had obtained marked improvement in 50 per cent and moderate improvement in 29 per cent. In the first thirty cases, sodium iodoxybenzoate was used, while in the subsequent thirteen cases the ammonium salt, prepared extemporaneously by dissolving the acid in water with the aid of ammonium hydroxide, was given. The drug was given intravenously over a period of not less than seven minutes in doses of from 0.75 to 1 Gm. at biweekly intervals for from six to eight doses. Since in animal experiments toxic effects were noted when the injection was made rapidly but not when the doses were given slowly, the influence of rate of injection on toxicity must be borne in mind in the treatment of cases. Following the injections, fever and chills were often noted and were regarded by the authors as favorable rather than otherwise. These reactions resemble nonspecific protein reactions, but the authors state that they have reasons for thinking that this is not the case. Thrombosis of veins at the site of injection was frequent with the sodium salt but much less frequent with the ammonium salt.

While marked improvement followed the use of the drug, sufficient time has not elapsed to admit of judgment as to the final curative effect of the treatment. The authors point out also the need of considering the natural history of arthritis, in which temporary and sometimes spontaneous periods of improvement occur. The results of further clinical trials must be awaited before a final evaluation of this method of treatment can be made.

A selected number of clinicians have been supplied with *o*-iodoxybenzoic acid prepared under the supervision of Young and Youmans for controlled hospital trials. However, the drug is not commercially available at present. In the meantime the A. M. A. Chemical Laboratory is carrying out a chemical study with the intention of elaborating tests and standards which will insure a satisfactory supply of salts of *o*-iodoxybenzoic acid. It is prepared to examine such salts when they are placed on the market and will publish the results.

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application. W. A. Puckner, Secretary.

ERYSIPELAS STREPTOCOCCUS ANTITOXIN (See The Journal, Aug. 28, 1926, p. 671).

E. R. Squibb & Sons, New York.

Erysipelas Streptococcus Antitoxin Concentrated Squibb.—This antitoxic serum is prepared according to the method of K. E. Birkhaug under license of the School of Medicine and Dentistry of the University of Rochester. It is obtained by immunizing horses by repeated injections of the toxic filtrate from a number of strains of hemolytic streptococci of erysipleas furnished by Birkhaug and the injection of living cultures of the streptococci. The antitoxic serum thus obtained is concentrated by a modification of the Banzhaf method, preserved by the addition of 0.1 per cent of cresol, and standardized by determining its neutralizing power against a specific toxin furnished by the licensor so that 1 cc. will neutralize at least 50,000 skin test doses of this toxin. The product is marketed in packages of one syringe containing 15 cc.

DIPHTHERIA ANTITOXIN CONCENTRATED (See New and Nonofficial Remedies, 1926, p. 330).

Eli Lilly & Co., Indianapolis, Ind.

Diphtheria Antitoxin, Purified, Concentrated-Lilly.—Marketed in syringe containers, containing, respectively, 1,000, 3,000, 5,000, 10,000 and 20,000 units each.

ANTISTREPTOCOCCUS SERUM (See New and Nonofficial Remedies, 1926, p. 339).

The Gilliland Laboratories, Inc., Marietta, Pa.

Antistreptococcic Serum (See New and Nonofficial Remedies, 1926, p 339): Also marketed in 20 cc. syringes.

POISON OAK EXTRACT-LEDERLE (IN ALMOND OIL).—A solution in almond oil of a substance extracted from the fresh leaves of poison oak (*Rhus diversiloba*).

Actions and Uses.—Poison oak extract-Lederle (in almond oil) is used to relieve the symptoms of the dermatitis produced through contact with poison oak.

Dosage.—From 0.5 to 1 cc. injected intramuscularly at intervals of from twenty-four to forty-eight hours.

Manufactured by the Lederle Antitoxin Laboratories, New York. No U. S. patent or trademark.

Poison Oak Extract Lederle (in Almond Oil) 1 cc.: Syringes containing 1 cc. of poison oak extract-Lederle (in almond oil).

Freshly gathered mature leaves of *Rhus diversiloba* are macerated with acetone. The resulting extract is decolorized and dehydrated and then concentrated until the content of solid matter becomes 20 per cent. Five parts of this liquid are added to 95 parts of sterile almond oil containing 1 per cent of chlorbutanol and this liquid is filtered.

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[204] Cushing, H., and Sladen, T.: J. Exper. Med. **10**:518, 1908.

[205] Hammond, G. M., and Sharpe, Norman: The Treatment of Paresis by Injections of Neosalvarsan into the Lateral Ventricle, J. A. M. A. **65**:214 (Dec. 18) 1915.

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SATURDAY, SEPTEMBER 4, 1926

DURATION OF THE SYSTOLE OF THE LEFT VENTRICLE

An easy arithmetical calculation indicates that the human heart must beat nearly 50,000,000 times in the course of a single year; and this cardiac performance continues undisturbed for three score years and ten in many a person. Even from the standpoint of the mechanism involved, this is a phenomenon that challenges attention. The layman is astounded by the apparent ability of a small muscular organ to work both without interruption and without fatigue; but the student of physiology soon learns to interpret the events of the cardiac cycle in other ways. He can readily demonstrate for himself that the life of the heart is by no means all work. Each contractile effort is followed by a period of rest and recuperation, without which the seemingly continuous performance would become impossible.

The average duration of the cardiac cycle occupied by systole and diastole of the heart in adult man is about eight tenths of a second. Of this time less than a third is ordinarily devoted to the contractile phase, or systole. An elaborate series of measurements recently recorded by Lombard and Cope[1] in the physiologic laboratory at the University of Michigan indicate that various factors influence not only the length of the cardiac cycle but also the duration of the systole of the left ventricle and its proportionate participation in the entire sequence of each beat. In men standing at rest, the percentage of the cycle occupied by the systole ranges from 25 per cent for a cycle length of 1.2 seconds to 40 per cent for a cycle length of only 0.5 second. In other words, as the cycles shorten the systoles may also shorten, but not in a proportionate manner. They tend to occupy a larger share of the available time as the pulse rate quickens from 50 to 120 beats a minute.

What is the interpretation of these changing relations? When the pulse rate quickens, cycles become shorter because of decrease both in systole and in diastole. The end of the diastole and the beginning of the next systole are determined, as we now know, by impulses from the sino-auricular node; but the termination of the systole and the beginning of the following diastole must be brought about by other influences. As Lombard and Cope interpret the changes, the systole is a muscular contraction, and its duration must depend primarily on the internal contractile processes characteristic of ventricular muscle. It is known that in addition to changes in the temperature and chemical composition of the circulating blood these processes are also affected by the mechanical stretching of the muscular fibers and to a certain extent, at least, by the action of nerves. It appears that the quicker the heart rate, the more rapidly the blood is pumped out of the veno-auricular reservoir, and the less the amount of blood that is left from the preceding cycles. The differences observed are presumably determined in considerable degree by the mechanical effect of the varying volumes and pressures of the venous blood supplied to the heart. As the Ann Arbor physiologists conclude, the duration of the systole is influenced by the quantity of blood collecting in the auriculoventricular reservoir between beats and acting on the ventricular musculature at the instant it begins to contract. The duration of the systole is modified by posture but apparently not by systolic, diastolic or pulse pressures. It varies with the sexes; but no relation was found to exist between the length of the systole and the time of day, the seasons, age, height, weight or the smoking of tobacco. The important conclusion is that the duration of systole is modified so largely by the quantity of venous blood supplied to the heart that this factor may disguise the effect produced by the condition of the heart muscle. Clinicians are eager to secure some adequate indication or diagnostic test of the efficiency of the cardiac muscle. As Lombard and Cope point out, the use of the length of the systole as a gage of the condition of the heart musculature must depend on future work that will take into consideration the quantity of blood to be pumped.

INSENSIBLE PERSPIRATION

The picture of Sanctorius, suspended on a balance, in the process of securing measurements of his continuous losses of weight, has become to students of nutrition a familiar reminder of the earliest quantitative measurements of bodily changes related to metabolism. Although more than three centuries have elapsed since the historic weighings on the unique steelyard, the feature that they sought to establish has scarcely awakened much scientific interest. The losses that are not included in urine, in feces or in the form of sensible moisture or sweat have long been designated as "perspiratio insensibilis"; they represent the insensible, invisible, intangible but weighable gaseous and vapor productions arising from the lungs in the process of exhalation, and from the skin by due process of vaporization. Insensible perspiration, or "intangible loss," as it has also sometimes been termed, represents the excretion of moisture and carbon dioxide. The development of physical apparatus has made it comparatively easy to measure such losses by records of the body weight at frequent intervals. Whatever interest has been apparent in relation to the results obtainable seems to have centered in their possible bearing on the water balance in the body. For some time, however, Benedict[1] and his associates at the Boston Nutrition Laboratory of the Carnegie Institution of Washington have directed their attention to refinements of technic and possibilities of its application. In a recent report, Benedict and Root[2] have brought out strikingly the influence of body size, ingestion of food, and exercise on the insensible loss. Since these factors likewise affect metabolism, it is evident, as they point out, that there is a relationship between the insensible loss and the metabolism. Thus, patients with thyroid disease, whose metabolism is high, were found to have a large insensible loss; in diabetic persons, with a lowered metabolism, the loss was smaller. Under suitable conditions of measurement, the general trend of metabolism was indicated by the insensible perspiration as well as the heat production.

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[1] Lombard, W. P., and Cope, O. M.: The Duration of the Systole of the Left Ventricle of Man, Am. J. Physiol. 77: 263 (July) 1926.

If, as now seems likely on the basis of data already available, there is a relationship between the readily measurable insensible perspiration and the simultaneous metabolism, and this relationship is sufficiently close to permit the use of the insensible loss as a general index of the probable metabolism of patients, the new procedure may have clinical value particularly in the preliminary assessment of the metabolic condition of certain cases. Values for insensible perspiration ranging from 14 Gm. an hour to 58 Gm. have been found to correspond with heat production ranging from 900 calories to 2,275 calories daily. Patients too ill or temperamentally unadapted for ordinary estimations of the basal metabolism can easily be subjected to determination of the insensible loss. This method of approximation, as Benedict and Root remind us, cannot replace the current accurate basal metabolism measurements under standard conditions. The weighings, on the other hand, are simple and add only insignificant expense to the hospital care of patients. Practical use of the new method in the clinic has already demonstrated its helpfulness.

To any one inclined to underrate the possible value of a procedure seemingly so simple as the accurate weighing of the human body, a reminder of what has been accomplished by other methods scarcely more complicated may be reassuring. Every physician has come to depend extensively on data secured by a count of the pulse rate, by observation of the rate of respiration, by thermometric measurement of the body temperature, and by recording physique in various ways. Mastery of such methods is easily acquired. Perhaps the easier determination of the insensible perspiration will also find a greater place in medical practice than has heretofore been accorded to it.

CORONARY THROMBOSIS

Whether the frequency of sudden death from heart disease, as at present encountered, represents an actual increase, or one that is only apparent when compared to a lessened number of deaths from other causes, is a problem for solution by those who consider medical statistics mathematically. The information of the more intelligent among the laity concerning the coronary arteries is rapidly developing, and bids fair to rival other familiarities that they enjoy with obscure but important portions of the human body. As a part of this dissemination of knowledge, there is a growing appreciation by physicians that much still remains to be told about disease of these arteries and its results. The balance between the right and left coronary arteries, the share each has in supplying the heart muscle with blood, the small but definite measure of safety in some collateral anastomosis between their capillary beds, and some facts concerned with the extent to which all these may vary in health, are matters of common professional cardiac gossip.

Some difficulty is met, however, in understanding the ways in which adjustments are made after the circulation in one coronary artery or in any of its larger branches is obstructed by thrombosis, adaptations which are possible only when the occlusion is not fatal immediately. A real need for information has developed, because physicians are learning that some measure of recovery often follows the first attack of coronary obstruction and they are anxious to know more about its nature and duration, the amount of destruction, and when death may ensue as its consequence. More exact knowledge regarding these details is imperative for betterment in both prognosis and treatment, notwithstanding the facility with which determinations may be made of the changes in general cardiac competence after coronary disease has become evident. The information desired is essentially quantitative in character; it concerns the degree of recovery and how long it may endure.

The situation is perplexing, because anatomically and functionally the conditions in the arteries and myocardium do not remain at a standstill. Progressive compensation proceeds in some parts, and new troubles arise in other regions of the diseased coronary circulation. These may occur at the same time or in an infinite diversity of sequence and location peripheral to single or multiple narrowings or blockings of the channels from sclerosis or sclerosis and thrombosis in the larger branches. There the disease also is far from stationary, but is instead capable of exhibiting as wide a range of slow or rapid evolution as elsewhere. An added complication is the lack of any constancy in the demands the heart is required to meet, and the influence this irregularity has on the transformations that are taking place in its substance and blood supply. The development of a solitary large scar or numerous small ones and the location of these results of infarction, the extent to which new muscle fibers appear about the margins of such regions, the disposal of the muscle dead from anemia and the effects of that disposition on the body as a whole, the recanalization of obstructed arteries and its sequences, the permanence or disappearance of evidence of the acute pericarditis frequently accompanying the infarction, and the causes and duration of decompensation, are examples of the phases of this disease in which physicians are steadily acquiring an interest and which require additional study.

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[1] Benedict, F. G.: The Correlation Between Perspiratio Insensibilis and Total Metabolism, Collected Articles Dedicated to the Seventy-Fifth Birthday of Prof. I. P. Pawlow, Published from the Institution of Experimental Medicine in Leningrad, 1924, p. 193. Nouvelles recherches du "Nutrition Laboratory" de Boston sur le métabolisme de l'homme et des animaux, Bull. Soc. sc. d'hyg. alimentaire **11**: 343; Grundumsatz und Perspiratio insensibilis nach neuen Untersuchungen, Schweiz. med. Wchnschr. **53**: 1101, 1923.

[2] Benedict, F. G., and Root, H. F.: Insensible Perspiration: Its Relation to Human Physiology and Pathology, Arch. Int. Med. **38**: 1 (July) 1926.

The present interest is not, however, confined solely to late events. A profound concern exists about the nature of infections that may bring about the disease of the wall of the coronary arteries and regarding the possibility that subsequent infections with transitory bacteremias initiate the thrombosis when the wall is already diseased. For many years a suspicion has been widely prevalent that the nodular thickenings in the walls of the coronary arteries near their mouths may assume importance only when a number of years have elapsed following the infection to which they may owe their origin. The possibility that we have been for some time and are still dealing with the late sequences of acute endarteritis and mesarteritis of the coronary arteries due to the influenza that began in 1918 is worthy of consideration, since many of the pronounced morphologic features of influenza, the hemorrhages for example, are due to injury to arteries and capillaries.

Another possibility has to do with the frequency of attacks of cardiac angina soon after a meal. These attacks apparently occur at such times just as commonly whether the trouble of the coronary circulation is from one or another of several conditions, such as sclerosis of the arteries with fibrous myocarditis, with or without thrombosis, or a narrowing of the mouths of these arteries by syphilis of the aorta. In the bodies of persons who have died unexpectedly from coronary disease, pathologists have long been accustomed at postmortem examinations to finding the stomach distended with food little altered by digestion. When death is less abrupt, vomiting of a large meal is often an early symptom, and patients with angina have long been cautioned to eat sparingly, or to take a little food at frequent intervals. With an adequate conception of the narrow margin by which circulation for the myocardium is maintained with the coronary arteries diseased, it is easy to understand that slight tilting upward of the apex of the heart by the push from below of the diaphragm and distended stomach may embarrass the circulation in the coronary arteries by just that added amount required to precipitate an attack. It is well to recall how the aorta and other large vessels at the base of the heart are fixed as compared with the movability of the apex of the heart. The mouths of the coronary arteries are located at or close to where some hinging of the heart on these structures may occur. Here are anatomic and pathologic factors leading specifically to a sound practical suggestion in the care of the patient afflicted with coronary disease.

ASPECTS OF INSULIN FUNCTION

The discovery of insulin has paved the way to a better understanding of the metabolism of the carbohydrates not only in disease, notably in diabetes, but also in health. It was soon shown that the administration of sugar and insulin to the diabetic patient resulted in an increased combustion of carbohydrate and the accumulation of glycogen in the depots. As Best, Hoet and Marks [1] have pointed out, however, when attempts were made to trace the fate of the sugar that disappears from the normal animal under the influence of an injection of insulin, difficulties were encountered. It has been ascertained that there may be a decrease in the inorganic phosphate content of the blood after the use of insulin at a period when the sugar concentration of the blood is falling. The interrelation of phosphoric acid and glucose in the metabolism of carbohydrates has long been recognized; consequently it was conceivable, in the light of the facts just cited, that the sugar not otherwise accounted for, after its disappearance from the circulation, might be stored somewhere, and presumably in the muscles, as a phosphoric acid ester or the lactacidogen of Embden. The studies [1] at the National Institute for Medical Research in London have made this seem unlikely. Best, Dale, Hoet and Marks [2] further aver that the glucose which disappears under the action of insulin is equal to the sum of the glycogen deposited and the glucose equivalent of the oxygen absorbed. They do not admit that the carbohydrate, ordinarily destined to form glycogen, *is deposited* in some unidentified form. Insulin, therefore, is conceived to prevent defective use or storage of carbohydrate and also excessive, wasteful formation from proteins (and perhaps from fats).

At the newly established Scripps Metabolic Clinic in La Jolla, San Diego, Calif., Janney and Shapiro [3] have approached the insulin problem from a somewhat different angle. Starting with the thesis that carbohydrate metabolites probably normally enter into protein synthesis and that carbohydrate is necessary for the retention of protein in the body, they have tested the effect of insulin on protein metabolism in man. Their experiments demonstrate that insulin and carbohydrate "spare" more protein than does carbohydrate alone; and this is interpreted to indicate that insulin functions in aiding protein synthesis from carbohydrate, probably by providing necessary metabolites. The hormone would thus have, in addition to its catabolic (glycolytic) action, the anabolic functions expressed in glycogen formation and protein reconstruction.

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[1] Best, C. H.; Hoet, J. P., and Marks, H. P. The Fate of Sugar Disappearing Under the Action of Insulin, Proc. Roy. Soc. London (B) **100:** 32, 1926.

[2] Best C. H.; Dale, H. H.; Hoet, J. P., and Marks, H. P.: Oxidation and Storage of Glucose Under the Action of Insulin, Proc. Roy. Soc. London (B) **100:** 55, 1926.

[3] Janney, N. W., and Shapiro, I.: The Rôle of Insulin in Protein Metabolism, Arch. Int. Med. **38:** 96 (July) 1926.

The intimate relation between insulin, carbohydrate and cellular metabolism thus postulated leads to interesting speculations. Janney and Shapiro suggest that the ultimate disturbance in diabetic metabolism may be a deficiency in the replacement, regeneration and repair of protoplasm due to the lack of carbohydrate transformations normally provided by the insulin. In the severest diabetes, untreated with insulin, the loss of body protein continues in spite of replacement of the inutilizable carbohydrate in the diet, by food and fat. Protein loss must therefore be due, as these investigators contend, to other than dynamic reasons alone. The pronounced protein-sparing influence of abundance of insulin along with adequate carbohydrate is, further, believed to warrant additional trials of the insulin-carbohydrate treatment in nondiabetic conditions involving "strain" on the protein tissues.[4] Prolonged infections, sepsis, malnutrition, nondiabetic toxic and comatose states, and trauma accompanied by acidosis are suggested as offering opportunities for a trial of the proposed restitutional therapy.

Current Comment

REGISTRATION OF BIRTHS AND DEATHS

At the last annual session of the American Medical Association, the House of Delegates adopted unanimously a resolution from the Section on Preventive and Industrial Medicine and Public Health concerning the registration of births and deaths. The preamble of this resolution stated the well recognized facts that information furnished by registration is essential to the progress of medical and sanitary science; that the principal countries of the civilized world have recognized its necessity, and that there are still seven states which do not have adequate death registration laws, and fifteen states which either have defective birth registration laws or registrations less than 90 per cent complete. The House of Delegates expressed its approval of the present movement to secure nationwide registration of births and deaths, and requested favorable consideration and action of state authorities so that complete national registration may be achieved before 1930. In an official communication from the Bureau of the Census,[1] the bureau emphasized that the American Medical Association has constantly urged such complete registration and that the greatest leaders of organized medicine have repeatedly expressed their conviction as to the importance of this movement. Of the fifteen states outside the birth registration area, eleven are distinctly in the Southern group, and of the seven with inadequate death registration, four are in the same group. The problem therefore becomes largely a sectional one, demanding special emphasis in the Southern states. When it is realized that many other problems of disease control are peculiar to the southern portion of the United States, leaders in those communities will no doubt bend every effort toward securing adequate registration, because only with complete knowledge of the extent of the situation that is to be met can effective means be found toward improvement. Too long we have had to labor under the handicap of inadequate data concerning our disease problems. As a nation, we have been compelled to modify all our computations on the basis of the "registration area." It is to be hoped that the passing of another five years will see sufficient progress made to eliminate these words completely from the medical statistical vocabulary.

THE BLOOD VOLUME OF MAN

Until recently, our knowledge of the volume of the circulating blood of man was based primarily on observations of the blood volume of animals. The amount has been variously estimated in figures ranging from one twentieth to as much as one third of the weight of the body. More precise information is obviously desirable from a clinical point of view as well as for purely scientific studies. Considerable progress has been made in establishing normal standards, since the introduction of the dye methods for determining blood volume, about a decade ago. Certain sources of error have meanwhile been ascertained and a large number of dyes have been subjected to critical study to ascertain the reliability and practicability of their use. The fact that bloods from different species may behave differently toward the same pigmentary substance has called for caution in reasoning by analogy; and unanticipated errors have been discovered in the ready adsorption of certain otherwise suitable dyes by the erythrocytes. In a recent discussion of the subject,[2] preference is given to "vital red" for the clinical tests. It is shown to be essential that the blood of the person examined be completely mixed with the dye injected, by a suitable routine of muscular movements. The total blood volume of a series of healthy men was found to average 4.9 per cent (or approximately one twentieth) of the body weight, with individual variations ranging from 4.2 to 5.9 per cent. The withdrawal of a quart of blood (approximating 1 Kg.) represents about 1.4 per cent of the weight of a 70 kilogram man, or more than one fourth of his circulating fluid. Such information is highly important at a time when blood transfusion has become an everyday clinical procedure.

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[4] Thalhimer, William: Surg. Gynec. Obst. **39**:237 (Aug.) 1924. Fisher, David; and Snell, M. W.: Insulin Treatment of Preoperative and Postoperative Nondiabetic Acidosis, J. A. M. A. **82**:699 (March 1) 1924.

[1] Every State in the Registration Area Before 1930, J. A. M. A. **87**:511 (Aug. 14) 1926.

[2] Lindhard, J.: A Dye Method for Determining the Blood Volume in Man, Am. J. Physiol. **77**:669 (Aug.) 1926.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Changes Among Health Officers.—Dr. Claude L. Murphree has resigned as health officer of Etowah County to accept a position as assistant state health officer, and is succeeded by Dr. Walter H. Harper, who has resigned as health officer of Marshall County. Dr. R. E. McClure has resigned as health officer of Jackson County to accept a position in Georgia, and Dr. Robert E. Harper, health officer of Lawrence County, has resigned to succeed Dr. McClure as health officer of Jackson County.

CALIFORNIA

Increase in Diphtheria.—During the first five months of this year there were more cases of diphtheria reported in San Diego than during the whole of 1925; not one of the cases, however, appeared in children who had received toxin-antitoxin.

Personal.—Dr. Charles B. Constable has been appointed city health officer of Lompoc.——Dr. William B. Wells, Riverside, has been appointed health commissioner of the newly organized Riverside County Health Service.——Dr. Thomas P. Manning, assistant chief of police and fire surgeon, Los Angeles, resigned from the city's service, July 16.

Alleged Impostor Used Deceased Physician's License.—Oscar Franklin, known in Maxwell and other cities as Dr. David Franklin, has been cited to appear before the state board of medical examiners in October to show cause why his license should not be revoked. It is alleged by the board that Franklin practiced for years in California using the certificate and credentials of Dr. David Franklin, who died in New York in 1903.

Liquor Licenses Revoked.—The office of the prohibition administrator in Los Angeles recently issued orders revoking the liquor licenses of the following physicians:

Benjamin O. Coates, Pasadena
Charlotte De Mont, Los Angeles
Wilbur C. Gordon, Los Angeles
George L. A. Hamilton, Los Angeles
William H. Hedges, Los Angeles
William T. Heffernan, Calexico
Seijiro Ishikawa, Los Angeles
Elbert Beecher Liddell, Los Angeles
Stephen M. Long, Fresno
Netta M. Ward Metcalf, Pasadena
Matthew J. Marmillion, Los Angeles
Thomas P. Moore, Watts
Tsuneo Murakami, Los Angeles
Frank W. Murphy, Los Angeles
Kiyohide Nakaki, Los Angeles
Samuel Paltun, Los Angeles
Carl G. Reum, Los Angeles
Henry A. Rivin, Los Angeles
Robert G. Russell, Los Angeles
John J. Tobinski, Los Angeles
Henry H. Towles, Los Angeles

Chiropractor Tries Obstetrics.—It is reported that the president of the Pasadena College of Chiropractic, Karl J. Weberg, had been in attendance "as a physician" on several cases of labor. The state board of medical examiners has therefore submitted to its chief counsel, Mr. Bianchi, the question whether a licensed chiropractor in California could legally practice obstetrics. The opinion rendered was in part as follows: "The practice of obstetrics is the practice of medicine and surgery and I know of no provision in the chiropractic initiative which allows the holder of a chiropractic license to practice obstetrics, and such practice by one not so authorized by the board of medical examiners is subject to the penalties prescribed by the act last named."

FLORIDA

Personal.—W. A. Claxton has been appointed chief of the division of health, department of public welfare, Miami; Mr. Claxton for years was with the state board of health as district health officer on the lower east coast.

Hospital News.—The Orange General Hospital has contracted for an addition of forty-five private rooms, which will give the hospital a capacity of 150 beds; the addition will be completed this fall; Dr. Lawrence C. Ingram has been elected president of the medical board of the hospital; Dr. Calvin D. Christ, vice president, and Dr. Meredith Mallory, secretary-treasurer.

Society News.—The Dade County Medical Society has retained the services of lawyers to handle certain cases of unlicensed practitioners and cultists. The state medical journal notes that the health department of Miami is cooperating with the county medical society.——The Dade County Medical Society held its annual banquet at the Miami City Club recently; a case of "Common Iliac Thrombosis as a Sequela of Chickenpox" was presented.

"Dr." Byrd—Thirty Days in Jail.—"Dr." Fletcher Byrd, St. Petersburg, formerly a hospital janitor, pleaded guilty to practicing medicine without a license, August 19, it is reported. Byrd is said to have been equipped with a medicine bag, powders, and bottles containing unidentified liquids, and was on his way to the "biggest practice in town," when an officer heard him make a diagnosis in the case of a negro woman. Byrd was sentenced to thirty days in jail.

Ordinance Against Quacks.—The city commission of Orlando passed an ordinance, August 4, which provides that any person undertaking to practice the profession of treating, healing or attempting to heal or treat human ailments must first have a license from the state board of examiners. The ordinance covers any form of treatment of the sick except that by religious faith or formula. The maximum penalty for violation of the ordinance is a fine of $100 or thirty days in the city prison.

GEORGIA

Society News.—Dr. Virgil O. Harvard, Arabi, addressed the Third District Medical Association at its thirty-eighth semiannual meeting at Americus, recently; Dr. Francis M. Martin, Shellman, among others, addressed the society on "Glaucoma and Iritis for the General Practitioner"; Dr. Cyrus K. Sharp, Arlington, on "Medical Ethics," and Dr. Robert E. McGill, Montezuma, on "Summer Diarrhea in Children." The society accepted an invitation to hold its next session with the Terrell County Medical Society.——Dr. Gilbert F. Douglas, Birmingham, Ala., has been elected president of the Chattahoochee Valley Medical and Surgical Association; Drs. Charles H. Richardson, Jr., Macon, Ga., and Marvin M. Head, Zebulon, Ga., vice presidents, and Dr. William J. Love, Opelika, Ala., secretary-treasurer.——Dr. Edson W. Glidden, Jr., Alto, has been reelected president of the Georgia Tuberculosis Association.——At the recent meeting of the First District Medical Society, Dr. William R. Dancy, Savannah, was elected president; Drs. James M. Cook, Sardis, and William W. Evans, Halcyondale, vice presidents, and Dr. William V. Long, Savannah, secretary-treasurer, reelected.——Dr. G. M. Corput, U. S. Public Health Service, addressed the Fulton County Medical Society, Atlanta, August 19.

CHICAGO

Dr. Solar's Liquor License Was Not Revoked.—Through an error in the office of the local prohibition administrator, The Journal, August 7, reported the revocation of the liquor license of Dr. Burton A. Solar. Dr. Solar's liquor license was not revoked.

Liquor Licenses Revoked.—The district prohibition administrator, Mr. E. C. Yellowley, revoked the liquor licenses of the following, August 30, it is reported:

Dr. Leon Boim
Dr. Edward O. Von Borries

The liquor license of the druggists Kidder and Lewis, 5058 Cottage Grove Avenue, among others, was also reported revoked.

Dr. Hale Appointed to University of Porto Rico.—Dr. Albert Barlow Hale, for many years a practitioner of medicine in Chicago, and from 1901 to 1903 associate clinical professor of ophthalmology at Rush Medical College, has been appointed professor of economic geography at the University of Porto Rico. Dr. Hale withdrew from practice in 1905 to travel in South America and for many years thereafter was a compiler for the Pan-American Union, the headquarters of which is in Washington, D. C. Recently Dr. Hale has resided in Chicago.

Society News.—Physicians in attendance at the Cook County Hospital summer clinics, which were conducted for the first time under the auspices of the Chicago Medical Society, came from many downstate cities as well as from Chicago; many of them signed a resolution, August 14, expressing appreciation of the effort on the part of the Chicago Medical Society to promote postgraduate instruction and the hope that this will be followed by similar postgraduate courses.——Dr. Harry E. Mock will deliver an address before the Fifteenth Annual Safety Congress to be held at Detroit, October 25-29, on "Human Salvage."

INDIANA

Personal.—Dr. Chester N. Frazier, an associate in dermatology at Peking Union Medical College, Peking, China, who has been granted a year's leave of absence, is visiting his parents at Bluffton.

Dr. Haas Resigns.—Dr. Homer C. Haas, Peru, has resigned as a member of the state board of health on account of poor health and, it is reported, has gone to California to reside. The governor has not yet appointed a successor to Dr. Haas, whose term on the state board would have expired in April, 1929.

Society News. — Dr. Frank W. Cregor, Indianapolis, addressed the Jasper-Newton County Medical Society, August 2, at Rensselaer, on "Common Skin Dieases."——The Whitley County Medical and Dental societies held a joint meeting, August 3, at Columbia City, and were addressed, among others, by Dr. Charles G. Beall, Fort Wayne, on "Cough," and Dr. Garrette Van Sweringen, Fort Wayne, on "Pulmonary Abscess."

LOUISIANA

Radium Located by Electroscope.—A radium needle valued at about $600, which was lost recently at the Charity Hospital, New Orleans, was located, August 16, in a pile of ashes by means of an electroscope.

MARYLAND

Personal.—Drs. John M. T. Finney and Howard A. Kelly, Baltimore, will serve on a national committee which will have charge of the formation of the first orthopedic hospital in the Near East; the hospital will be for children under the care of Near East Relief.

Professor Brouwer Offered Chair at Johns Hopkins.—Prof. B. Brouwer of Amsterdam University has been offered the chair of neurology at Johns Hopkins University, it is reported. Professor Brouwer visited Johns Hopkins in April, at which time he gave the Herter lectures.

Military Surgeons Organize.—At a meeting in Baltimore, July 1, the Baltimore chapter of the Association of Military Surgeons of the United States was organized; Col. Frederick M. Hartsock was elected president; Lieut. Col. Arthur M. Shipley, vice president, and Major Mahlon Ashford, secretary-treasurer. About fifty officers attended this meeting, and after the business session, Major Arnold D. Tuttle, U. S. Army, representing the Surgeon General, gave a talk on "Military Hospitalization."

The Teachers' Part in Vaccination Program.—The state department of health has called attention to the law that prohibits the enrolment of unvaccinated school children. Following is an extract of the law:

> No teacher in any of the public schools in this state shall receive into such school as a pupil any person who has not been successfully vaccinated. . . . If any person shall apply for admission as a pupil in any of the public schools of this state who has not been successfully vaccinated, the teacher shall give the parents or guardian or any other person having control of such pupil an order directed to any physician in the county or city as the case may be and requiring any physician to whom it may be presented to vaccinate such pupil and make return of such vaccination when successful to the teacher giving such order. . . . Any teacher neglecting or refusing to comply with the provisions of this section shall on conviction thereof before any justice of the peace having jurisdiction over said offense be fined ten dollars for each and every offense.

MICHIGAN

Change of Address. — The offices of the Michigan State Medical Society and the *Journal of the Michigan State Medical Society* were moved, September 1, from the Powers Theater Building to Suite 1508, Grand Rapids National Bank Building, Grand Rapids.

Personal.—Dr. Aldred S. Warthin, professor of pathology and director of the pathologic laboratory, University of Michigan Medical School, will deliver a series of lectures before the sixth annual summer school of the Vancouver Medical Association, Vancouver, B. C., September 13-16.

Society News.—The Wayne County Medical Society has established a cancer clinic at the Harper Hospital, it is reported, which will be conducted in cooperation with the American Society for the Control of Cancer; there were said to have been 900 deaths from cancer in Detroit in 1925.——Dr. David R. Landsborough, Daggett, has been elected president of the Upper Peninsula Medical Society; Dr. William J. Anderson, Iron Mountain, vice president, and Dr. William H. Alexander, Iron Mountain, secretary.

MISSOURI

Personal.—Dr. Arthur R. McComas, Sturgeon, has been appointed surgeon of the American Delegation to the Press Congress of the World, which convenes at Geneva, Switzerland, September 14-18.——Dr. Allen Benson Clark, Joplin, has resigned as health commissioner of the Western Jasper County District, effective, September 1.

Society News. — The Tri-County Medical Society—Saline, Cooper and Howard counties—which was recently organized, will hold its meetings in Marshall; Dr. David F. Manning, Marshall, has been made president of the new society; Dr. Caius T. Ryland, Lexington, vice president, and Dr. Robert W. Kennedy, Marshall, secretary-treasurer.

Alumni Night at Kansas City Clinics.—Wednesday evening, October 13, has been set aside as "Alumni Night" during the Kansas City annual fall clinic conference, which convenes, October 11-15, at the Hotel President, Kansas City, where the alumni dinners of forty different medical schools will be held. Further information may be obtained from Dr. Hermon S. Major, 3100 Euclid Avenue, Kansas City.

Koch Hospital Crowded. — The hospital commissioner of St. Louis has ruled that ex-service men receiving compensation from the U. S. Veterans' Bureau will no longer be admitted to the Koch Hospital, which now is overcrowded. Koch Hospital is maintained entirely by the city of St. Louis as a free institution for the treatment of tuberculosis and cannot, therefore, it is said, accept pay from any one, notwithstanding the willingness of veterans to pay for their care.

Bond Issue Proposed.—A bond issue of $7,380,000 is being advocated by the board of managers of the state eleemosynary institutions for the purpose of increasing the facilities for the care of inmates in state hospitals and other eleemosynary institutions. The board plans to ask for $2,000,000 to construct a new hospital to serve the northeast section of the state, $1,000,000 for state hospital no. 1 at Fulton, $1,285,000 for state hospital no. 2 at St. Joseph, $790,000 for state hospital no. 3 at Nevada, $735,000 for state hospital no. 4 at Farmington, $830,000 for the school for the feebleminded and epileptic at Marshall, and $760,000 for the state sanatorium at Mount Vernon. The board considers that these expenditures would anticipate the requirements of all eleemosynary institutions for twenty-five years. The board proposes also to increase the fees of private patients in the state hospitals from $20 to $42 a month. The Jackson County court not only opposes the increase in fees but asks the board to erect a new state hospital for the insane either in Kansas City or in Jackson County, provided the bond issue is approved.

MONTANA

"Silver" Anniversary.—Dr. Fred F. Attix, president of the state medical association, was host at a banquet, August 18, in Lewistown, to the members of the Fergus County Medical Society on the occasion of the completion of his twenty-fifth year in the practice of medicine. Out of town guests at the banquet were Dr. Charles F. Watkins, Billings, past president of the state medical society; Dr. Elmer G. Balsam, secretary of the state medical society; Dr. Samuel K. Campbell, vice president of the state medical society; Dr. George K. Wilson, Streator, Ill.; Dr. Ellsworth F. Ross, Harlowton; Dr. Albert B. Dismore, Stanford, and Dr. Edward M. Gans of Judith Gap.

NEW YORK

Liquor License Revoked.—The office of the district prohibition administrator at Buffalo issued orders recently revoking the liquor license of Dr. Charles Kaufman, who was formerly an intern in a hospital at Buffalo.

New Medical Director.—Dr. Mortimer W. Raynor, superintendent of Kings Park State Hospital, will succeed Dr. William L. Russell as medical director of the Bloomingdale Hospital, White Plains. Dr. Russell becomes general director of the psychiatric work of the Society of the New York Hospital, of which the Bloomingdale Hospital is a department.

Township Without a General Practitioner. — The recent death of Dr. Charles D. Hulbert of Westerlo, Albany County, leaves that village and the township without a general practitioner of medicine, according to *Health News;* the nearest physician lives across the county line about 10 miles away. Physicians interested in locating in this village should communicate with Mr. D. Boyce, Westerlo, N. Y.

Smallpox Record.—As a result of systematic vaccination, there has not been a death from smallpox in Syracuse for thirty-seven years, according to the city health department. There have been, however, since Jan. 1, 1926, nineteen cases of infantile paralysis in Syracuse with five deaths, also an epidemic of measles of 2,257 cases. There was not a case of measles reported in an infant under 3 months of age.

New York City

Committee on Hazards and Emergencies.—The committee on hazards and emergencies appointed by Mayor Walker is making a survey of the hospital resources of the city, to determine what part of them might be used in case of a serious epidemic. The object of the committee, it appears, is to map out a definite program and perfect an organization which could go into action without loss of time.

Hospital News.—The Park West Hospital, 170 West Seventy-Sixth Street, was opened, August 16, under the directorship of Dr. Harold M. Hays; this seventy-two bed hospital has complete roentgen-ray equipment, a clinical laboratory, two major operating rooms, a resident physician, and, among other things, a solarium; it is open to all qualified physicians.——The Willard Parker Hospital has contracted for the construction of an isolation pavilion to cost $137,000.

Another "Milkman" Found Guilty.—Frederick W. Kautzmann, formerly head of the special service squad of the city health department, was found guilty, August 20, of accepting a bribe, it is reported, in connection with the release of cream which had been seized as it was being brought into the city without the sanction of the health department. The maximum penalty that can be imposed is ten years in prison or a fine of $5,000 or both on each of two counts. This is the third conviction since Health Commissioner Harris began an investigation into the so-called milk graft ring.

Personal.—Dr. Aaron Leifer has been appointed instructor in medicine at the University and Bellevue Medical College, New York University.——Dr. Wendell C. Phillips, President of the American Medical Association, will address the Fifteenth Annual Safety Congress to be held at Detroit, October 25-29, on "The National Health Problem."——Dr. Abraham A. Levy has been appointed physician to outpatients at Gouverneur Hospital for 1926.——The commissioner of the department of public welfare has appointed Dr. Joseph A. Lanahan superintendent of the Lincoln Hospital.——Dr. Oswald S. Lowsley will address the German Urological Association which meets in Vienna, September 30-October 1, on "Major Urologic Operations Under Regional Anesthesia," illustrated with moving pictures.

NORTH CAROLINA

Chiropractor Charged *with Dislocating Hip.* — *Robert M.* Cox, chiropractor of Winston-Salem, has been made defendant in a $50,000 damage suit brought by Dan W. Turner, it is reported, who alleges that he sustained a dislocation of the hip while receiving treatment from Cox, and that as a result of that injury he is a cripple and permanently injured.

Personal.—Dr. Thurman D. Kitchin, of Wake Forest Medical College, has been appointed director of the colored state hospital at Goldsboro to succeed Dr. Joseph F. Patterson, New Berne, resigned.——Dr. John W. MacConnell, colonel, M. O. R. C., secretary of the state board of medical examiners, has returned from Carlisle Barracks, Pa., where he took a two weeks' course in military training.——The will of the late Dr. John W. Long, Greensboro, leaves an estate estimated at $500,000, which, on the death of his wife, is to be divided into four equal portions, one to each of the children, and the remaining fourth to establish the Mary Long Foundation for educational and philanthropic purposes; his private hospital is to be continued at the option of the trustees of his estate; Dr. Richard B. Davis, superintendent, Wesley Long Hospital, Greensboro, has been elected by the board of trustees to continue the operation of the hospital of the late Dr. John Wesley Long.

OHIO

Society News.—Dr. E. Otis Smith, Cincinnati, was the guest of honor at a meeting of the medical association of the sixth councilor district at Mansfield, August 11; the subject of his address was "Kidney Infections."

Appointment to State Medical Board.—Governor Donahey appointed Dr. Lester E. Siemon, Cleveland, a member of the state medical board, August 19, it is reported, to succeed Dr. T. Addison McCann, Dayton, resigned. Dr. McCann is a candidate for Congress.

Better Milk for Mansfield.—At a special meeting of the *board of health* of Mansfield, August 18, regulations were adopted providing that after October 18 no milk can be sold in the city which has not been pasteurized unless it is the product of tuberculin tested cows.

Personal.—Dr. James F. Wilson, Good Hope, has been appointed health officer of Fayette County, succeeding Dr. Theodore F. Myler, who goes to the Ohio Soldiers' and Sailors' Home at Xenia.——Dr. Horatio Z. Silver, Eaton, has been appointed health commissioner of Preble County, to succeed the late Dr. George W. Homsher.

OKLAHOMA

Teachers Vaccinated Against Typhoid.—More than 1,500 teachers have been given the antityphoid vaccine at the Southeastern State Teachers' College. The work was supervised by the state department of health, and the vaccine was furnished without charge. Last summer, 835 teachers were *thus immunized, and during this summer session,* about 700.

Resolution About Expert Witnesses.—At the recent annual meeting of the Oklahoma State Medical Association, Oklahoma City, the following *resolution* was adopted:

> Whereas, There has grown up in the courts of the country a medicolegal system which is subject to just criticism, *in that reputable* physicians and surgeons of high standing in the profession are often arrayed against each other in medicolegal contests in such manner that there may often be cast a doubt *as to the true intention of the medical expert,* therefore, be it
>
> *Resolved,* By the House of Delegates of the Oklahoma State Medical Association now in session in Oklahoma City, that it shall be considered unethical for any of its members within the state of Oklahoma to serve as an expert medical witness in any court of *said state,* except he be appointed by the court as an impartial medical expert.

OREGON

Society News.—Dr. James C. Bartlett, Ontario, was elected president of the Eastern Oregon Medical Society at its recent annual meeting at Hot Lake, and Dr. Carl J. Bartlett, Baker, secretary, reelected.

Course in Periodic Health Examinations.—The Oregon State Medical Society is conducting a course in periodic health examinations for its members which, it is reported, has been "highly successful." Plans are being made to give a similar course this fall as part of the state university's *extension* work.

Doernbecher Hospital Opened.—The official opening of the Doernbecher Hospital for Children took place July 30. The hospital is a memorial to F. S. Doernbecher whose heirs *gave $200,000; it is on a site on Marquam Hill* donated by the University of Oregon Medical School. The American Legion contributed $35,000 to the first half years' operating expenses; the Rotary Club, $20,000; the State Federation of Women's Clubs, $20,000; the Elks, $18,000; the Junior League, *$2,000,* and *$69,000* was raised by *popular* subscription. The hospital is a part of the state medical school, and will care for children under 17 years of age.

PENNSYLVANIA

Hospital Dedication.—The Harrisburg Polyclinic Hospital will dedicate its new four story, fireproof building and a new nurses' home, September *16, when a reception* will be held for the professional men of that community, and on September 18, when the general public will be invited to the hospital; all departments of the hospital have been reorganized and the laboratories fully equipped. The project was financed by public subscription. The hospital occupies a 6 acre site in the northern *part* of the city *overlooking* the Susquehanna Valley.

Society News.—The Warren County Medical Society was the guest of its members who live in Corry, August 16, at a dinner, following which was an address on "Orthopedics" by Dr. James R. Durham of Warren and Dr. Arthur G. Davis of Erie.——Dr. Charles W. Many, Doylestown, addressed the North Penn Clinical Society, Sellersville, August 18, on "Public Health."——The Cambria County Medical Society will hold a stag *picnic, it is reported,* at the O-Ke-We-Lah Grove near Johnstown, September 9; the program comprises a baseball game, boxing bouts, shooting contests, and a dinner; the society has planned for its October meeting an afternoon clinic at Cambria Hospital to be conducted by Dr. John B. Deaver and Dr. *David Riesman,* both of Philadelphia, who will speak also at the banquet.

Philadelphia

Smallpox Quarantine.—About a thousand persons were vaccinated against smallpox between Tenth and Eleventh streets and Spring Garden and Callowhill streets, following the discovery of a case of smallpox, August 9, in a negro.

Personal.—Dr. John Norman Henry, president, General Alumni Society, University of Pennsylvania, recently conducted a party of 200 members of the American Legion on a pilgrimage to the billet for orphans conducted by the legion at Clarksboro, N. J.——Dr. Chevalier Jackson will address the fifteenth annual Safety Congress at Detroit, October 25-29, on "What Two Thousand Children Have Taught Me."

Society News.—The Philadelphia County Medical Society will have addresses by laymen each Monday, beginning in September, in the grill room of its new home, Twenty-First and Spruce streets; the public health lectures given by the society for the laity last year will be given from September 21 to December 21 every Tuesday evening in the auditorium; the postgraduate seminars will be given Friday afternoons at 4 o'clock, beginning October 1; the first scientific meeting of the season will be September 22.

TENNESSEE

Change of Date of Walnut Log Meeting.—The date of the meeting of the Walnut Log Medical Society at Reelfoot Lake, Tenn., announced in The Journal last week, has been changed to September 29-30, on account of the meeting of the Kentucky State Medical Association on the days previously announced. Arrangements for transportation from Union City, Obion and Dyersburg and from Hickman, Ky., to the Walnut Log Inn will be made for any one who will communicate with the secretary, Dr. Robert L. Motley, Jr., Dyersburg, Tenn. Physicians in good standing in their local societies are invited to be present and become members. There will be a scientific program including speakers from St. Louis, Memphis and Nashville, in addition to the outing.

Increase in Typhoid.—There were 590 cases of typhoid reported in Tennessee in July this year, as compared with 317 in July last year, according to a statement attributed to the state commissioner of health. The number of cases reported in July, 1926, is said to have been eight times the number of cases reported in June, while the number of cases reported in July last year was less than twice the number reported in June. The increase is said to be general over the state with no definite localization in any particular section. It is pointed out that the typhoid incidence is lower in counties which have full-time health departments than in those which have no organized health departments. For example, the typhoid rate in July in counties with full-time health departments was 19 per hundred thousand of population, while in the unorganized counties it was 26.

TEXAS

Society News.—Plans have been announced for the erection of a medical arts building at Eighth and Polk streets, at Amarillo, costing $1,000,000.——The physicians of Austin recently gave a barbecue and swimming party in honor of the members of the Seventh District Medical Society, which met in that city; and the Lions Club, Sulphur Springs, recently gave a luncheon in honor of the North Texas District Medical Association, which met there.

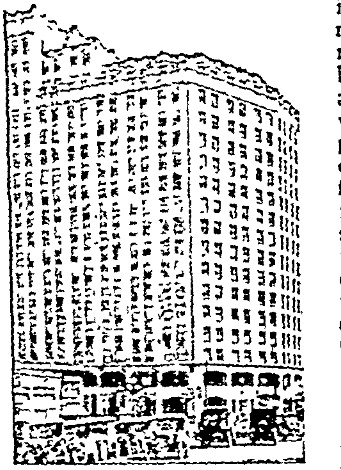
Personal.—Dr. Isaac N. Roberson, Gainesville, has resigned as county health officer.——Dr. Charles W. Castner is the superintendent of the new Wichita Falls State Hospital.——Dr. Charles W. Goddard, chief of the health service, University of Texas, has been granted leave of absence in order to assume charge of the Austin Public Health Department, September 1. Dr. Leroy A. Wilkes has been appointed to succeed Dr. Goddard at the university health service. Dr. Wilkes recently returned from two years' work in Austria as a representative of the Commonwealth Fund.

Smallpox in Texas Increasing.—In the first seven months of this year, eighty-six counties in Texas reported smallpox, the number of cases ranging from 234 in Harris County to one in a number of other counties. The total number of cases reported in that period was 1,668, while for a similar period in 1925 there were 1,228 cases, and in a similar period in 1924 there were 857 cases. The state board of health has issued a bulletin stating among other things that the automobile in cross-country travel brings the smallpox menace to every town; health officials are urged to use every means possible to secure vaccination against smallpox.

WASHINGTON

Increase in Death Rate.—The death rate for the state of Washington in 1925 was 10.12 per thousand of population, as compared with 10.01 in 1924, the U. S. Department of Commerce announces. The principal increases in rates were from nephritis, influenza and whooping cough.

Personal.—Dr. Oliver J. Moorhead has resigned as county health officer and entered in private practice at Kendrick, Idaho.——Dr. James B. Eagleson, Seattle, has been elected a member of the board of directors of the Dime and Dollar Savings and Loan Association.——At the annual meeting of the trustees of *Northwest Medicine*, Spokane, recently, Dr. Clarence A. Smith, Seattle, was elected secretary and editor in chief.



Medical and Dental Building in Seattle.—About three years ago, advanced rentals in Seattle brought on a general meeting of physicians and dentists to consider the creation of a medical and dental center which would be under professional management and control; recently an eighteen story, fireproof, thoroughly modern, $2,500,000 medical center was completed and is practically all rented at a rate about 20 per cent less than most physicians and dentists had been paying for inferior accommodations. There is a well equipped fifteen bed hospital and four surgeries for emergency work on the sixth floor. The basement has been fitted up as an auditorium seating 400 persons, committee rooms, library, storage rooms, etc., and a garage, from which the rental provides funds for other organization purposes. Only tenants could acquire stock in this corporation, but tenants were not required to invest. The house committee of six physicians and six dentists (Dr. J. Howard Snively is now secretary) approves all applications of tenants. The King County Medical Society, the dental and surgical societies meet here, as do many other professional affairs. The foundation and two floors have already been built for an addition to the building when applications justify the undertaking.

GENERAL

Accidents in Coal Mines in June.—Reports received by the U. S. Bureau of Mines indicate that 145 lives were lost in this country in accidents in coal mines in June; 105 of the deaths occurred in bituminous mines and forty in anthracite mines. The death rate per million tons of coal mined for the industry as a whole was 2.85.

Commission of Spanish Scientists Coming.—The Spanish government is sending a commission of physicians and other scientists to the United States to observe methods; among those in the party are Prof. Obdulio Fernandez, professor of pharmacy at the Instituto Alfonzo XIII, and Prof. E. Moles of the Valencia Medical School; they will arrive this month.

Visit of British Medical Students.—Seventy-nine medical students, members of the Cambridge University Medical Society, sailed from England, August 13, for a twenty-two day visit to hospitals and medical schools in the United States and Canada; they return, sailing from New York, September 11, after having visited Baltimore, Washington, Philadelphia, New Haven, Boston, Montreal, Kingston, Quebec and Toronto.

Automobiles Kill Eighteen a Day.—In the four weeks ending August 14, there were 497 deaths due to automobile accidents in seventy-eight large cities in the United States reported to the department of commerce; the number for the corresponding four weeks of last year was 467. Nine of the seventy-eight cities reporting had no automobile fatalities, while in the corresponding period of last year, seven of the cities reporting had no automobile fatalities.

Infant Mortality.—The department of commerce has issued a statement showing the number of deaths in 1925 of infants under 1 year of age per thousand births (exclusive of stillbirths) for the white and colored population in 100 selected cities. Leavenworth, Kan., had the highest infant mortality rate (571.4) on this list for the colored race, and

Seattle, the lowest (33.7). The highest infant mortality rate (107.8) on the list for the white race was for Staunton, Va., and the lowest (30) for Columbus, Miss. The list of cities includes all those in the birth registration area of more than 10,000 having either not less than 10 per cent or 10,000 colored population.

Tariff on Surgical Forceps.—The U. S. Customs Court of New York has reduced the tariff rate on surgical forceps from 60 per cent ad valorem to 45 per cent. The point at issue seemed to be whether under the law to class these instruments as "hand forceps" or as "surgical instruments." The judge said, in part, that the importers had not made the slightest attempt to prove the precise character of the merchandise with a view to establishing its correct tariff status, and that had the court had the exhaustive briefs on the law which it now has a different conclusion very likely would have been reached heretofore. The court concluded (1) that the term "hand forceps" is completely foreign to the surgical instrument trade; (2) prior to Sept. 2, 1922, when the present tariff law went into effect, there was recognized and generally known and thoroughly understood throughout the industry the term "surgical forceps," and (3) such surgical forceps were then and are now used exclusively in the science of surgery and are insusceptible of any other use.

Bulletin on Maternal Mortality.—The Children's Bureau, U. S. Department of Labor, has published a bulletin on "Maternal Mortality," which was prepared by Robert Morse Woodbury, Ph.D. It is stated that in 1921 in the death registration area the number of deaths due to puerperal causes was 15,027, and that on the assumption that the death rate outside the registration area was identical with that within the area, the total number of deaths in the United States was 18,281. An estimate is made of the maternal mortality rate from figures for the birth registration area on the assumption that the birth rates and the maternity mortality rates for white and colored separately are the same outside the birth registration area as within the area; with that assumption the average rate of maternal mortality for the United States would be 7 to every 1,000 live births. There is in this bulletin also a discussion of the factors in puerperal mortality, of the trend of puerperal mortality, and a comparison of maternal mortality in the United States with foreign countries. The chapter on prevention of maternal mortality is subdivided into (1) protective legislation; (2) provisions for maternal care, and (3) governmental responsibility. Among the appendixes in the bulletin is a tabulated summary by states of the laws and regulations covering midwives in the United States in force in December, 1924.

Immigration of Professional People from Europe.—During the fiscal year 1925-1926, professional people from Europe continued to come to this country in increasing numbers, our net gain in this kind of immigration, says the National Industrial Hygiene Board, amounting to 9,041 as compared with 8,367 during the year 1924-1925. Immigration on the whole showed an increase over that of the previous year amounting to 4 per cent, but the declining emigration of aliens from the United States made our net gain in population through immigration 13 per cent greater than the year before. The total number of aliens immigrating amounted to 304,488, while 76,992 left the United States, leaving a net gain in population of 227,496, which is 64 per cent less than the net immigration during the last year before the new restrictions went into effect. Canada and Mexico continue to furnish the bulk of immigration under the new law, neither country being subject to quota restrictions. Canada in the last fiscal year contributed more than 91,000 immigrants (9,000 less than the year before), while Mexico sent more than 43,000, about 10,000 more than the year before. The exodus of Italians from this country amounted to 20,004, as against more than 27,000 that left in the previous year. On the whole, countries that are restricted as to quotas succeeded more nearly in filling their quotas during the last fiscal year than in the previous year.

FOREIGN

Central Serologic Laboratories in France.—The *Clinique* gives the list of the fifteen centers for free serologic examinations already established in France by the decree of the minister of labor and hygiene. It is proposed to increase the number to cover the entire country. They are connected with already established public hospitals, laboratories and medical schools but are autonomous. The service is free to physicians and to public and private institutions for public hygiene, especially combating the spread of venereal disease. Paid examinations can also be made according to the tariff of the institution with which they are connected.

Dr. Watkins-Pitchford Resigns.—Dr. Wilfred Watkins-Pitchford has resigned as director of the South African Institute for Medical Research, Johannesburg, and as chairman of the miners' phthisis medical bureau on account of ill health. Dr. Watkins-Pitchford has been director of the institute since it was opened in 1912, and chairman of the miners' phthisis medical bureau since it was established by the legislature of the South African Union in 1916; his connection with South Africa, however, dates back to 1897, when the Natal government decided to erect a laboratory for the study of diseases in stock, and commissioned him to report on the laboratories of Europe. The *Medical Journal of South Africa*, of which Dr. Watkins-Pitchford was editor during the World War, says ill health has brought to a close many years of strenuous labor on behalf of the country of his adoption, the cause of medical research and the honor and interests of his profession.

Plague and Cholera in India.—The July report of the Health Section of the League of Nations indicates that the world's greatest focus of plague is in British India. In a list of countries and provinces in which plague is endemic, the report shows very few cases of plague in some and in others fifty or a hundred, but under British India, the cases are reported by the thousands; from May 2 to May 8, there were 8,028 deaths among 9,896 cases in British India, from May 9 to May 15, 7,466 deaths among 9,536 cases, and a gradually decreasing number up to May 30-June 5, when there were 3,993 deaths among 4,665 cases. Our own hemisphere is represented on this list of plague foci by Ecuador, where there were five cases and no deaths reported, by Peru, where there were seventy-six cases and thirty-seven deaths, and by Colombia, where there was one death. The cholera situation in India appears to have been no less severe, for 8,767 deaths were reported from April 19 to May 8, and 4,937 deaths from May 9 to June 5. It is interesting to note that no cholera was reported during this period in the Western Hemisphere and only two deaths in Europe. There is, in this report, comment on puerperal fever to the effect that it is reportable in many countries, but notification is not seriously enforced except in a few countries. It is obviously incorrect to believe that puerperal fever is thirty times more common in Germany than in France, and twenty times more common in Scotland than in the Irish Free State, as reports received by the league would indicate.

Third Pan-Pacific Science Congress.—Through the generosity of the imperial Japanese government and under the auspices of the national research council of Japan, the Third Pan-Pacific Science Congress will be held in Tokyo, October 30-November 11. Overseas delegates and members of their families will be guests of the congress from October 26 to November 15; their rooms will be reserved and, it is expected, railway tickets provided by the imperial government. Arrangements will be made as far as possible for other scientists not in the capacity of delegates to enjoy the same privileges including also reduced fares to Japan, provided the proper information is received by the secretary in time through the organizations listed in the announcement of the congress. The National Research Council, Washington, D. C., is the organization representing the United States on this list. The first Pan-Pacific Science Congress was held in Honolulu in 1920, and the second in Australia in 1923. Their main objects are to promote cooperation in the study of scientific problems related to the Pacific region and to promote a feeling of brotherhood; fifty-three subjects have been selected for discussion at the section or division meetings; those which follow pertain to medicine: (1) distribution, prevention and cure of particular diseases among native races of the Pacific region; (2) *Ascaris, Ancylostoma* and *Schistosoma:* distribution, life history, clinical aspects, prevention and treatment. The general secretaries of the congress are Prof. N. Yamasaki and Prof. K. Mutsubara, Tokyo Imperial University. English will be the language used at all meetings of the congress.

Deaths in Other Countries

Dr. John Francis Hall-Edwards, a pioneer in roentgenology, August 15, aged 68; Dr. Hall-Edwards had lost the use of both hands as the result of burns by the roentgen ray. He was prominent in a number of British medical organizations and the author of books on the roentgen ray.——Dr. C. Oddo, professor of clinical medicine at the University of Marseilles, author of "Médecine d'urgence," now in its fifth edition, and founder of the commission for relations with neutral countries which rendered such signal service during the war, aged 66.——Dr. L. von Liebermann, professor of hygiene at the University of Budapest and author of numerous works on forensic and physiologic chemistry, aged 74.——Dr. W. Fleiner, formerly professor of internal medicine at the University of Heidelberg, aged 69.——Dr. O. Madelung, emeritus professor of surgery at the University of Göttingen, aged 80. His name is familiar from the Madelung deformity and lipoma neck.——Dr. A. Gómez Calvo, formerly professor of mental diseases at the University of Bogota, president of the Academia Nacional de Medicina.——Dr. John C. McVail, former deputy chairman, Scottish National Health Insurance Commission, contributor to Allbutt and Rolleston's System of Medicine, former president of the Society of Medical Officers of Health of Great Britain, July 29, aged 76; Dr. McVail delivered the Lane lectures at Cooper Medical College, San Francisco, in 1906, on "The Prevention of Infectious Diseases."——Dr. Reginald Ernest Horsley, former lecturer on biology at Stonyhurst College, Scotland, and of late years a writer, July 22, aged 62.——Dr. Frank Andrew, formerly president of the eye and ear section of the Victorian branch of the British Medical Association, June 7, at Sydney, Australia, of angina pectoris.——Dr. Jacob Cohn, Berlin, noted for his works on urology, aged 62.——Dr. A. Falck, professor of pharmacology at the University of Kiel, aged 76. ——Dr. Marcelino Vargas, Buenos Aires, general in the army medical corps.——Dr. J. M. Caballero, Buenos Aires, one of the founders and president of the Sociedad de Obstetricia y Ginecologia, chief of staff of the Rivadavia Hospital.——Dr. J. Pando y Valle, Madrid, one of the founders of the Collegios Médicos of Spain, the compulsory organizations of the profession for material interests.——Dr. A. Cevidalli, professor of legal medicine at the University of Padua.

CORRECTIONS

Diphtheria Trends Downward.—In this item under New York City in The Journal, last week, the number 2,993 should have been 3,993, and the number 19,472 should have been 10,742.

Cause of Death.—According to the Chicago Health Department records, the death of Dr. Julius Henry Hoelscher was due to cancer of the stomach instead of heart disease, as noted in The Journal, August 28.

Government Services

New Officers in Charge of Quarantine Stations

The U. S. Public Health Service has issued orders directing the following officers to assume charge of the quarantine station indicated:

Surg. William H. Slaughter, relief station no. 245 at Galveston, Texas.
Surg. Harry E. Trimble, U. S. Quarantine Station, Marcus Hook, Pa.
Surg. Matthew K. Gwyn, Columbia River Quarantine Station and Relief Station, no. 204, Astoria, Ore.

Navy Personals

Lieut. Comdr. Harold L. Jensen has been assigned to temporary duty to attend a course of instruction at the University of California Medical School, and Lieut. Comdr. Page O. Northington to attend a course of instruction at New York Post-Graduate Medical School and Hospital.——Lieut. Comdr. Harold S. Sumerlin has been transferred to the Naval Hospital, San Diego, Calif., and Lieut. Comdr. Henry E. Jenkins from the marine barracks, Quantico, Va., to the U. S. S. *Pittsburgh*.——The following medical officers have resigned from the navy: Lieut. (j. g.) Clamor H. Gavin; Lieut. (j. g.) Fay H. Falconer; Lieut. (j. g.) Louis A. Hitzemann.—Lieut. Comdrs. William Chambers and William L. Mann, Jr., have been assigned to duty for a course of instruction in aviation medicine at the army school, Brooks Field, San Antonio, Texas, beginning September 6; on completion of the course, Lieut. Comdr. Mann will be assigned to the U. S. S. *Saratoga*, and Lieut. Comdr. Chambers to the U. S. S. *Lexington*.——Comdr. Thurlow W. Reed has been transferred from the Virgin Islands to Hampton Roads, Va. ——Lieut. Comdr. Lyle J. Roberts has been transferred from Pearl Harbor, Hawaii, to the naval station at Guam.——Lieut. Comdr. Kenneth E. Lowman has been transferred from Norfolk, Va., to the Virgin Islands, and Lieut. Comdr. John M. Huff from the navy yard, Philadelphia, to the radio station, San Juan, P. R. The following navy medical officers have resigned from the service: Lieut. Comdr. Robert P. Henderson, bureau of medicine and surgery, navy department, Washington, D. C.; Lieuts. (j. g.) Laverne B. Hurt, Virgin Islands, Arthur J. Hamilton, U. S. S. *Texas*, and Elmer T. Cure, Haiti.——Comdr. Ulysses R. Webb has been ordered transferred from the naval hospital, Mare Island, Calif., to the marine detachment, American Legation, Peking, China.——Lieut. Comdrs. Willard J. Riddick, William H. Michael and Paul W. Wilson have been recommended for transfer to the sanitary service, Republic of Haiti.—Lieut. Comdr. Charles L. Oliphant has been recommended transferred to the bureau of medicine and surgery, navy department, Washington, D. C.——Lieut. Comdr. John L. Shipley has been recommended transferred from the naval hospital, Norfolk, Va., to the naval hospital, Annapolis, Md.

Notice of Entrance Examination

The U. S. Public Health Service will hold examinations of candidates for entrance into the regular corps of that service at Washington, D. C., Chicago, New Orleans and San Francisco, October 4. Requests for information concerning entrance to the corps should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C. Candidates must be graduates of a reputable medical college, have one year's hospital experience or two years in practice, and must pass satisfactorily the examination before a board of officers and undergo a physical examination.

U. S. Public Health Service

Surg. Edward R. Marshall and Asst. Surg. Charles L. Quaintance, U. S. Public Health Service, have been assigned to duty at Ellis Island, N. Y.——Surg. Walter W. King has been relieved from duty at Paris, France, and assigned to duty at Washington, D. C.——Senior Surgeon Taliaferro Clark has been relieved from duty at London and assigned to duty at Paris, France.——Asst. Surg. Gen. Rupert Blue was directed, July 15, to proceed from Los Angeles to San Diego and return for a conference relative to plague preventive measures.——Surg. Harry F. White has been relieved from duty at Los Angeles and assigned to duty at the quarantine station, Baltimore.——Surg. Roscoe R. Spencer has been directed to proceed from Washington, D. C., to such points in Virginia and nearby states as may be necessary to investigate suspected cases of Rocky Mountain spotted fever; Dr. Spencer was also directed to proceed to such places in North Carolina and nearby states as may be necessary to examine cases of communicable diseases.——Dr. Ralph Upson has been appointed and commissioned in the grade of assistant surgeon, effective the date of oath.——Orders have been issued assigning Surgs. Francis A. Carmelia, Ernest A. Sweet and P. A. Surg. Lester C. Scully to duty at the U. S. Public Health Service, Washington, D. C.——Surg. Randolph M. Grimm has been relieved from duty at Chicago and assigned to Ellis Island, New York.——Surg. Paul M. Stewart has been relieved from duty at London, England, and assigned to New York City.

School of Aviation Medicine Transferred to Texas

The war department recently issued orders removing the School of Aviation Medicine from Mitchel Field, L. I., to Brooks Field, San Antonio, Texas, where future courses of instruction in aviation medicine will be given.

Medical Officers and Correspondence Courses

There were 2,536 officers of the medical reserve enrolled for correspondence courses, March 31, and 206 medical officers of the national guard.

Officers Ordered to Foreign Duty

Orders have been issued by the U. S. Public Health Service assigning Surg. Dana E. Robinson to duty at London, England; Surg. Mark V. Ziegler to duty at Cobh, Irish Free State; P. A. Surg. Fortunat A. Troie to Honolulu, Hawaii, and Surg. James E. Faris to Goteborg, Sweden.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 16, 1926.

Annual Meeting of the British Association for the Advancement of Science

At the annual meeting of the British Association for the Advancement of Science, many papers not only of general interest but of special interest to physicians were read.

THE ORIGIN OF SPECIES

The Section of Zoology was opened by an address by Prof. H. F. Osborn, president of the American Museum of Natural History, on the origin of species as it appeared to Darwin and as it appears today. The address attracted such attention that the room was crowded. In 1830-1859, when Darwin was collecting facts for his immortal work, said Osborn, knowledge of zoology was limited and of paleontology almost absent. For example, in one of the volumes in Darwin's library, preserved at Cambridge, the number of species of mammals known in 1827 was 1,124, whereas 13,450 species and subspecies were known today. Knowledge of other vertebrate groups had increased in similar or larger proportions, and knowledge of fossil forms had increased out of all proportion. In Darwin's time, species stood apart like mountain peaks, whereas today they were known to be connected by intermediates and intergradations in very many cases. It was the more a testimony to the boldness and validity of Darwin's intellectual grasp that he should have disputed the fixity of species and insisted on their origin by a process of evolution. The new knowledge, attained by the Lyell-Darwin methods by which evolution was discovered, showed that species did not originate by inheritance of acquired characters or by the survival of fortuitous variations which happened to be adaptive. It confirmed Weismann's sharp distinction between germinal specific characters and bodily adaptations to environment and habit. It contrasted strongly with the negative results of the genetic school, as stated in the final address of the late William Bateson.

We now understood the modes by which new species and subspecies originated; they were continuous, determinate and, on the whole, adaptive. Species-in-the-making, or, to use the technical term, the process of speciation, had been independently discovered among fishes, amphibians, reptiles, birds and mammals. Geographic isolation, with enforced physical or chemical change, enforced change of habit, enforced competition with new environment and with new stimulus to the germinal energies themselves, constituted the chief known cause, but how the complex of causes acted on the germ plasm to produce adaptive results was unknown. Speciation was an excessively slow process; 40,000 years, the lapse of time since the last glaciation, was a moderate estimate of the time that had been required to produce the new species and subspecies of whose origin we had evidence. But paleontology showed that speciation had been going on among animals and plants for 1,000,000,000 years. It showed an agreement with zoology in the principles of continuity and of determinate movement, but it had added two new principles. There was a germinal evolutionary trend in definite directions, under which new specific characters passed from rudimentary to highly efficient stages. Secondly, the trend was a kind of potentiality rather than an inherent perfecting tendency. We were entering an entirely new area of research on the problem of the origin of species, marked by the decline and death of the chief speculations based on the knowledge of the first half of the nineteenth century. But our enhanced knowledge made the problem of the causes of the origin of species infinitely more difficult even than it appeared to Darwin.

BIOCHEMISTRY

Prof. J. F. Thorpe, president of the Chemical Section, devoted his address to the theory and some of the applications of organic chemistry. The chemistry of the compounds of carbon, he said, embraced all living matter, the vast number of nonliving substances produced by the agency of life, and a great number of compounds unrelated to life or to living processes which had been built up by the chemist in his laboratory. Already some 200,000 definite compounds of carbon had been tabulated, and the number was being increased annually by several thousands. Carbon had been used by nature as the basis of organized life, because its capacity to combine with itself was shared by no other element. The simpler compounds were usually crystalline, and living matter employed much more complex compounds, containing many hundreds of elemental atoms which belonged to the class of colloids. The complex must be approached through the simple. Until we could determine how small a number of carbon atoms combined with one another, we could not hope to obtain any insight into the manner in which the more complex natural substances were built up, or any information regarding the way in which they are utilized to bring about the changes occurring during animal and vegetable metabolism. The president then discussed the present position of structural organic chemistry and the attempt to represent molecules in formulas of three dimensions. The branch of science was only fifty years old, and too much could not be expected from it. It was quite true that the knowledge gained already had led to the synthetic preparation of quite a number of natural products, many of which were of service in relation to human needs. But the synthesis of such compounds had not provided much insight into the mechanism leading to their production in nature. More work had yet to be done in relating the stereochemistry to the electronic theories of modern physical chemistry and to the energy relations of the production of organic substances. In its earliest days, organic chemistry dealt only with those compounds which were derived from natural sources, and it was believed that only such substances could be produced through the agency of life. But this has been shown to be wrong by the preparation in the laboratory of many substances identical with those formed in life processes. Nevertheless, the more complex substances which nature utilizes in building up animal and vegetable structures still show no signs of yielding the secrets of their constitutions or the mechanism by which they are produced. Indeed, although we can imitate in the laboratory certain natural operations, such as the hydrolysis of starch to glucose, we are still quite ignorant of the means by which glucose is converted, by the appropriate enzyme, into alcohol and carbon dioxide; nor can we imitate this process in the laboratory. When the chemist had passed beyond the crystalline and the distillable, he entered a region full of difficulties, because he had few means either of purifying the materials or of testing their homogeneity when purified. And yet, if biochemistry were to justify its name, it would have to bring into line the wealth of knowledge acquired by physiologists and pathologists with organic chemical structure. The best method would probably be to attack the problems by the provision of trained students of two kinds, the one trained in physiology but with a sufficient knowledge of organic chemistry to promote sympathy with and knowledge of the chemist's point of view; the other an organic chemist who had devoted the last year of his course to physiology. A special field open to biochemists was the research into the organic compounds distributed among the plants, trees and grasses which formed the forests and jungles of the world.

FUNCTION AND DESIGN

In his presidental address to the Section of Physiology, Prof. J. B. Leathes said that function implied ministration, structure for physiology implied adaptation to function, i. e., design. Ultimate analysis of the phenomena of physiology leads to the fundamental distinction between matter in which life is manifested and matter in which it is not. Life is exhibited only in aqueous systems, containing unstable, perishable combinations of carbon with hydrogen, nitrogen, sulphur, phosphorus and oxygen, in the presence of certain inorganic ions, those which are present in the sea, the native environment originally of all forms of life. These unstable organic combinations are forever reforming themselves out of simpler combinations at a rate which averages at least not less than that at which they break down. This power of self-reformation, spontaneous regeneration, operates not only when living organisms, cells or communities of cells are growing or reproducing their kind; the very maintenance of living existence requires by definition that it should persist. In the absence of water, the living process may sometimes apparently be suspended for a time, as it may be if the surrounding watery medium is immobilized by cold. But this may not be anything more than a retardation to a rate of change imperceptible by the ordinary methods of observation. It is only where water has the kinetic activity of the liquid state that spontaneous regeneration of living matter can in general proceed, and then it must, for when it ceases the unstable material ceases to live. Leathes contrasted customary comparisons of the growth of crystals with the growth of living matter, and showed that the two phenomena were utterly different. The molecules that constitute the crystal are set in solid formation; so long as the crystal exists, they are stable and unchangeable. These molecules collect on the growing crystal, but they exist ready made in the surrounding solution; they do not come into being by the influence of the crystal; they are so constituted as to take up a set position in relation to each other and to those already ranged side by side in the crystal; they are available because the solution is kept saturated by the dissolving of smaller but similar crystals that for physical reasons are more soluble in the solution than the larger ones. In contradistinction to this, the molecules that enter into the composition of living matter exhibit the phenomena of life only when permeated with water molecules exercising the kinetic activity of the liquid state; they are unstable and perishable; the added molecules, some of which even during growth and all of them at other times serve but to replace those that perish, do not exist ready made; they come into being only in conformity to the pattern and under the influence of those already in existence, a pattern that these alone can use; and they are formed out of material that is chemically different from them.

THE RANGE OF NEANDERTHAL MAN

In the Section of Anthropology, Prof. Sir William Boyd Dawson, F.R.S., discussed "The Range of the Neanderthal Race on the Pleistocene Continent." He emphasized the fact that *Anthropus neanderthalensis* must be distinguished from *Homo sapiens.* He was only one of an indeterminate group of *Anthropidae*—men in the making—a group still so fragmentary that more evidence was needed. Elliot Smith had shown the important points in which the Neanderthal brain differed from that of *Homo sapiens,* and in which it was akin to the brain of the higher apes. The Neanderthal hunter had not yet attained a chin or the erect posture, and his mentality, though superior to that of the apes, did not come up to the standard of modern man. He ranged over a large part of the great Pleistocene continent (by "the great continent" Sir William explained that he meant a continent uniting the arctic regions with North Africa as far as the Sahara Sea; the Greek islands were then continuous land and Italy was joined to Africa by way of Malta) before the arrival of the late Paleolithic tribes of the cave artists. Skulls and bones of *Anthropus neanderthalensis* had been found in caves of Belgium, middle France and southern France, and in caves at Gibraltar and in Palestine. They occurred in association with early Paleolithic implements identical with those found in the river deposits over the whole of the intermediate areas between the countries named. Hence it might be assumed that the Neanderthal tribes were dominate in the great continent through the middle Pleistocene period, and before the arrival of the artist hunters, who were the earliest representatives of *Homo sapiens;* i. e., the human race.

PARIS

(From Our Regular Correspondent)

Aug. 11, 1926.

The Income Tax as It Affects Physicians

The medical profession in France is suffering, in a very peculiar degree, from the consequences of the economic crisis that holds the whole country in its grip. There are several reasons for the present state of affairs. The physician is of the type of the "middle class," on which always falls, under such circumstances, the weight of the taxes, against which he is powerless to protect himself. As the cost of living advances, members of the working class protect themselves through the influence of their unions, and threats of strikes, together with the aid of their representatives in parliament, who see to it that their taxes are greatly reduced, since the income tax applies only to incomes above a figure that exempts the average income of a workman. Likewise, the merchants do not fail to raise their prices, taking account of increases in the taxes, and often adding a little more than necessary, for fear of not adding enough to cover all advances. The wealthy class has various means of protecting its capital, some by depositing their funds in foreign banks, which remit to them the interest in the form of drafts. The physician, however, finds it difficult to protect himself. He cannot raise his schedule of fees to any great extent. Competition among physicians is keen, for in the cities, at least, there is a superabundance of physicians, and it is impossible to maintain, through the influence of the medical syndicates, or unions, a minimum fee schedule, since it is easy to violate the spirit of any agreement, for the physician is always free to reduce his charges in special cases that may appeal to his sympathy.

Then, again, the clientele of the physician is not as large as it was formerly, for many persons economize by employing self-medication as long as possible, having recourse to advertised "specialties." Then, too, a large percentage of the population—workmen, employees, some of them holding high positions—receive free treatment by physicians in the employ of industrial associations. In addition, the professional expenses of physicians have increased greatly. The wages paid to their personnel are five times what they were before the war. The cost of medicines, instruments and transportation has increased in the same proportion. Most physicians who formerly owned an automobile have been obliged to dispense with it. Also the rent of apartments has more than doubled, and the amount of rent paid by physicians serves as the basis for the imposition of a trade license tax. A physician who paid 6,000 francs rent before the war, and 1,500 francs for his trade license, pays today a rent of 15,000 francs and 5,000 francs trade license tax. The scarcity of vacant apartments prevents physicians from finding a less expensive apartment, and the majority, fearing lest a change of quarters might affect their clientele disadvantageously, prefer to submit to the increases in rent with the consequent diminution in their income.

The income tax is also increasing from year to year, weighing especially heavily on "noncommercial professions," in which class physicians are placed. The rate in 1925 was 6 per cent; for 1926 it was 7.2 per cent, and the act of August 3, 1926, has raised it to 12 per cent. The members of parliament appear to take a severe attitude toward physicians, doubtless having in mind the large fees of a dozen or more surgeons of renown, and establishing thus rates that threaten to crush the remaining 25,000 physicians of France. Furthermore, the treasury department seems to be suspicious of physicians and accuses them of being inclined to make inaccurate reports on their income, taking advantage of the fact that they may refuse, by reason of the right of privileged communication, to allow government officials to audit their account books. They have also had the presumption to add to the regular taxes of the physician a special surtax figured arbitrarily on the basis of the physician's presumed personal income as evidenced by his visible expenditures, such as rent, automobile and country villa. Since the rent, as has been said, is now much higher than that of an apartment which the physician would choose in normal times, according to his resources, it will be seen to what lengths the treasury officials have gone in taxing the physician, and that, owing to the combined causes mentioned, the medical profession of France, at present, is oppressed as possibly no other in the world.

The enormous afflux of foreigners to France, which, in the opinion of some, is a source of prosperity, is of no direct interest to the general practitioner and profits only hotel keepers and merchants. The visiting foreigner who is taken ill consults ordinarily, on account of the language, a physician of his own nationality already established in the country, whose address he has provided himself with in advance, or he appeals to the hotel physician, who is often compelled to pay a percentage to the hotel. The Paris physician who does happen to treat a foreigner at his office is quite often cheated out of his fee if he does not demand a cash payment, which has tended to make him suspicious, a large number of foreign patients, in spite of their respectable appearance, not seeming to have any scruples about leaving the country without paying their account with their physician, or even of indicating, for the presentation of their bill at their hotel, a date beyond that of their intended departure.

Owing to the causes cited, there has been a notable decrease in the number of Frenchmen taking up the study of medicine, which fact has been somewhat obscured by the increase in the number of foreign students. Recent statistics have shown that in Paris there is a marked decrease in the number of physicians' sons among the students of medicine, whereas formerly they constituted a large percentage of the medical students. This observation goes to show that physicians, in view of their recent experiences, are choosing less frequently a medical career for their sons. The good will, therefore, which once reposed in and was cherished by so-called medical families, thus threatens to become much diminished.

The Vast Increase of Pharmaceutic Specialties

The bad effect, mentioned above, on the clientele of the physician caused by the use of pharmaceutic specialties has become, of late years, very pronounced. The example of large pharmaceutic houses has demonstrated to pharmacists the fact that they can acquire a fortune much more easily and rapidly by exploiting a pharmaceutic formula under a registered trade name than they can by filling prescriptions in their laboratory. They are content, therefore, to copy a prescription frequently presented (after having inquired of their clients as to the good effects it produces), and to select some bizarre name for it, which they have registered at the Tribunal du Commerce, and which is henceforth protected by all machinery of law against counterfeits. When, in a communication presented to the Academy of Medicine in Paris, or before a learned society, some new formula is published, half a dozen specialists spring up immediately afterward for the purpose of exploiting the formula under various names and offering it to the public without a physician's prescription and without even consulting the proponent of the formula. In fact, sometimes the proponent sees his own name used on the labels and the accompanying literature without always being able successfully to oppose such use, the publication of his formula before the academic tribunal and in the journals that gave an account of the meeting having placed it openly in the hands of the public. The manufacturer may even make reference to the presentation before the Academy of Medicine in order to inspire public confidence in the remedy. The pharmacist is not even compelled, at first, to become a manufacturer. There are houses eager to transform into commercial specialties any formula that a pharmacist, desirous of taking the risk, may bring to them. Such houses, too, are ready to submit to him sample preparations, with different prices according to the composition of the product, the weight per bottle or box, the style of container and label, the form of packing, or the character of the prospectus, and even will present estimates on various types of advertising schemes commonly employed. All the pharmacist needs to do is to decide how much money he wishes to invest in the enterprise, to select his style of container, form of prospectus and advertising scheme, and then to wait patiently in his laboratory the results of his venture, just as if he had staked a certain sum on his favorite horse at the Derby.

At this game some have made fortunes at the start. But today the number of pharmaceutic specialties of this kind has become so great that no human memory is capable of retaining the 25,000 fantastic names under which they are dispensed. Every pharmacist, as soon as he begins to succeed with one specialty, immediately puts out others, in order to make his name better known. His dream, though not openly avowed, is to possess a complete assortment of remedies, embracing the principal diseases, so that all forms of treatment might be given solely with products of his house. Some of the simplest and best known drugs have been put on the market as specialties, the unusual purity of the product being especially emphasized—all the way from opium-containing drops to relieve colic, to the ordinary mixtures of alkaline powders to alleviate gastric pains. There are on the market a good many remedies that promise to effect a return of delayed menses, and, since the law prohibits the advertising of contraceptives, one ingenious pharmacist conceived the idea of adding this masterful word of warning to the label on his emmenagogic pills: "Not to be taken in case pregnancy is suspected." The advertising pages of the daily papers do not contain anything of greater public interest than the pharmaceutic products offered the public without the necessity of producing a medical prescription. The harm done the medical profession at a time when the people feel compelled to reduce expenses, and, in case of illness, are glad to avoid consulting a physician, has been enormous.

But the excessive number of these pharmaceutic preparations has finally served to check their further development. A large number of them are losing their popularity. The promoters are endeavoring in a hundred ways, therefore, to prevent a slump in the sales. Some are not content to advertise in the press but actually call on, or send their representatives to visit, the physician in his office, to present to him their products, to set forth their paramount virtues, and to wrest from him the promise to prescribe them to his patients. As these importunate solicitors are often shown the door, the manufacturers commonly enroll for such service persons of respectable appearance, women of good breeding in straitened circumstances, retired officers and civil servants with inadequate incomes, who gain entrance to the physician's waiting room at the hours of consultation and wait patiently among the clients for their turn, and, when admitted to the physician's private office, take out of their pocket a small box or vial and proceed to give a glowing account of the marvelous effects of the remedy. Manufacturers of orthopedic corsets send young women of comely appearance, who offer to disrobe to demonstrate on their own person the method of applying the apparatus.

The government, always on the lookout for new sources of revenue, has finally put a heavy tax on these specialties. This tax has the effect of raising the price of such products, and is the physician's only chance of coping with the evils of the situation. But the union of manufacturers of pharmaceutic specialties is opposing with great energy the imposition of such taxes, declaring that such action will serve to check the progress of science(?), put a damper on exportations that exert a favorable influence on the exchange situation, and deprive patients of beneficent remedies. One of their champions in parliament has referred to such a tax as a "tax on the public health." The manufacturers have even had the audacity to ask the Academy of Medicine to intervene in their favor. The only concession that they have been able to obtain, however, in spite of the support of the press, for which the manufacturers of pharmaceutic specialties are excellent clients, owing to the large sums they expend for advertising, is that the treasury officials have consented to divide the specialties into two groups. The first group comprises pure, isolated chemical products; dangerous alkaloids, which can be manufactured only by expert chemists; organ extracts and serums, which can be produced only in well equipped laboratories, and which employ trade marks to guarantee the value of the product and to give to the physician who prescribes it a feeling of security. The tax on this first group is small. The second group, which is much more heavily taxed, comprises the mass of preparations referred to above, which are merely simple mixtures or imitations of well known formulas. The tax on the second group has been recently almost doubled, which action the medical profession has endorsed in most hearty fashion.

GENEVA

(From Our Regular Correspondent)

Aug. 15, 1926.

Dentistry in Switzerland

The practice of dentistry in Geneva has at last been settled, thanks to the following case: A certain dentist of Swiss nationality possessed a French diploma of dentistry. He had obtained from the council of state of Geneva the permission to practice temporarily, although this permission was contrary to the law. Therefore, the syndicate of dentists of Geneva appealed to the federal court, which decided against the decree of the council of state, basing its decision on article 4 of the federal constitution, on "suppression of privileges and equality of citizens before the law." Then the dentist in question launched a popular vote to change the law in his favor. The change consisted in adding the paragraph: "Every Swiss or naturalized Swiss for ten years, having obtained the diploma of dentist in any foreign country which entails the right to practice in that country, can practice his profession in Geneva." Three thousand signatures, as required by law, were obtained and the affair was brought before the grand council, which appointed a commission to study this proposition. The commission reported unfavorably for this change in the law, showing among other things the absence of any guarantee of many foreign diplomas, the uncertainty for the public to obtain competent practitioners and the injustice in respect of the dental faculties of Switzerland, which exact very complete studies. Then, April 10 and 11, the change in the law was rejected by a popular vote of 8,000 to 1,400. The question is thus definitely settled and henceforward only those complying with the law can practice dentistry in Geneva.

Heredity and Cancer

Professor Guyénot of the University of Geneva recently delivered a lecture to the Geneva Medical Society on heredity and cancer. The origin of cancer is a complex problem; it offers a certain analogy with that of the variation of species; it has been attributed to internal factors (heredity, genetic) or external factors (irritation). At present the notion of hereditary cancer seems to have lost ground, especially from the experimental production of cancer by means of irritating agents. It is practically impossible to draw any conclusions from human statistics, as they are disturbed by too many factors, and the number of members of families is too small in each instance. Parasites play a part in certain cases, although their cycle in the human organism is not always known. Recently it has been found that *Ascaris,* a common human parasite, does not reach its development until it has circulated in the blood; hence its toxins may act on various organs, in which cancer will develop a long time afterward. Even in experimental cancer the soil plays a part, while in other instances the rôle of heredity is preponderant. Therefore there exist acquired cancers and hereditary cancers, and neither theory in any way excludes the other.

When cancer grafts are made in mice, there will be found both refractory and receptive lineages; some of these may give from 80 to 100 per cent receptivity, others varying in this respect from 0 to 20 per cent, as is indicated in the following table:

Mice (American race)	from 80 to 90%	receptivity
Mice (first European race)	from 4 to 5%	receptivity
Mice (second European race)	from 18 to 25%	receptivity
Mice (third European race)	from 35 to 41%	receptivity
Mice (Japanese race)	100%	receptivity
Mice (wild)	0%	receptivity
Mice (hybrid)	0%	receptivity
Mice (cross-bred hybrid-wild)	0%	receptivity
Mice (cross-bred hybrid-Japanese)	100%	receptivity

In cancers produced by parasites, the common rat gives 60 per cent receptivity, the wild *Mus rattus* gives 3 per cent; *Mus decumanus,* 33 per cent; white mice, 2.5 per cent, and field mice, 0 per cent. Hence there can be no doubt that the soil plays an important part. There is no direct relationship between inflammatory reaction (precancerous) and cancer. Bullock and Curtis had no difficulty in producing cancers in American rats, while the results were nil in European rats. The application of tar readily produces cancer on the back of mice, while the rabbit's ear is more sensitive in this respect; the guinea-pig is refractory. Susceptibility to cancer consequently varies with race, families and individuals.

In the fly *Drosophila* cancer is purely hereditary, being transmitted by the female and being present in 50 per cent of their male offspring. Here the transmission is similar to that of hemophilia in man. In the case of the fly the mendelian formula is perfectly applicable, and chromosome-cancer can be followed through successive generations. These neoplasms are malignant, produce metastases, and can be cultivated and grafted; they are unquestionably transmitted by pure heredity without any possible intervention of other factors.

Professor Guyénot referred to Miss Slye's careful experiments in mice and then pointed out that the sensibility of an organ to cancer may be transmitted by cross-breeding. Desmoid sarcoma on the backs of mice is produced by bites of the male during coitus; massive sarcoma develops after depilation, but this occurred in only a single lineage, although all the others had been subjected to the same traumas. One may conclude from these data that heredity in mice confers either immunity or receptivity; it causes susceptibility to tumor growth of certain areas. The age of the animal at the time the neoplasm develops is characteristic for each lineage of mice.

In the case of man, in cities with a cosmopolitan population, quite marked variations in mortality from cancer are noted according to the races, varying from 6 to 50 per 10,000 cases. Northern races are more frequently affected with cancer than those of the South. In Japanese women, cancer of the breast is rare; in Jewesses, very common. Unquestionably there are cases of cancer in the human race due to some initiative process, but they are rare. A susceptibility to reaction exists in predisposed organs; spontaneous cancers are responses to inevitable agents of irritation, but acting on organs sensitive to malignant processes. In the ovum these localizations are already distinct; the organism is a mosaic of territories that up to a certain point can be demonstrated. Heredity acts on susceptibility to the production of cancer. One can vary the proportion of dexter and sinister snails by external agents, but the same result is obtained by cross-breeding. This applies to cancer; the constitution of the territory comes into play, but external factors have also their influence. Given these data, Guyénot concludes that suppression of cancer is unlikely, because the factors of irritation are too common to be done away with. Contrary to the tuberculosis problem, we must look for means of cure since the prevention of cancer is probably not possible.

Eczema in Infants

Dr. E. Freer of Zurich has been so successful in the treatment of eczema in infants that an outline of his treatment of the various forms of this dermatitis may be worth while. In papular eczema the pruritus is calmed by painting the parts with a 2 to 5 per cent alcoholic solution of menthol or thymol, or with a 2 per cent powder of ethyl aminobenzoate. The free use of a powder of one part zinc oxide and three parts talcum is efficacious, the parts being first smeared with cold cream in order to retain the powder. Painting with the following is both clean and agreeable: zinc oxide, 25 Gm.; glycerin, 25 Gm.; talcum, 25 Gm.; alcohol, 12.5 cc.; distilled water, 12.5 cc. This formula controls pruritus and acts well on the lesions.

Impetiginous eczemas of the scalp and face are usually first seen when the parts are covered with crusts. Dressings with borated petrolatum, renewed every day, will transform this type to moist eczema, which is to be dealt with by gauze moistened in a 10 per cent solution of aluminum acetate, renewed from three to five times daily. Ointments are useless in the moist phase; but when the inflammation and oozing have markedly subsided, a paste composed of zinc oxide, talcum, petrolatum and hydrous wool fat, equal parts, will control both the oozing and the pruritus, when pyrogallol triacetate, from 1 to 5 per cent, or a sulpho-ichthyolate preparation, from 3 to 10 per cent, are added. When a moist eczema has been cleansed, the application of a 1 or 2 per cent silver nitrate solution will give remarkable results in some cases.

In dry eczema the patches are to be painted with a thin layer of unrefined tar and, after drying, a powder composed of equal parts of talcum and zinc oxide is applied and covered by a porous dressing. In twenty-four hours a black pellicle will have formed. The tar is applied again four or five days later. This drug controls both pruritus and inflammation and favors the formation of the epidermis.

For squamous eczema, Freer uses an ointment consisting of zinc oxide and bismuth subnitrate. In cases of stubborn eczema he has obtained good results with radiotherapy, but they are not lasting.

BELGIUM

(From Our Regular Correspondent)

July 25, 1926.

The Health Insurance Societies and the Physicians

I have referred in previous letters to the old controversy between the mutual aid societies (called in other countries *Krankenkassen* or *caisses d'assurances*) and the medical leagues, or unions. Two years ago, the minister of health appointed a joint commission composed of physicians and directors of mutual aid societies for the purpose of elaborating some general plan of health insurance that would be satisfactory to both parties. After prolonged discussion, the commission has finally proposed a plan, which, however, does not seem to satisfy the parties concerned. The plan proposed provides for the creation in each province of Belgium of a joint committee composed of physicians and directors of mutual aid societies. It would be the duty of each provincial committee (1) to establish the regional tariff schedules on either a contract or an individual fee basis (or the two combined), for the remuneration of physicians who shall agree to assume the medical care of the members of mutual aid societies, and (2) to make uniform the contracts already established by local subcommittees regulating the relations between the mutual aid societies and the medical leagues, and to study all the questions pertaining to the functioning of the aid societies in their relations with the medical profession.

With regard to the manner in which persons insured in the mutual aid societies may make use of medical services, it was agreed that: 1. Insured members of the aid societies should have the free choice of a hospital or clinic among the list approved by the joint commission of physicians and directors of mutual aid societies. 2. The approved list of hospitals as set up by the joint commission appointed by the minister of labor will be based on a report presented by the medical service and the inspector of labor. 3. In order to be placed on the approved list, hospitals and clinics must meet the following conditions: (*a*) They must be equipped and managed in such a manner that the members of the mutual aid societies may receive absolutely satisfactory care. (*b*) Medical inspectors of the mutual aid societies must be admitted at all reasonable times, and they must be allowed the privilege of assisting in operations and of exercising control over the members of the aid societies undergoing treatment. It is understood that, previous to operation, except in case of an urgent emergency, the mutual aid society may demand that its medical inspector be called in consultation. (*c*) The fee fixed by the joint commission must be accepted for the operation and special treatment. (*d*) On request of the medical inspector of the mutual aid society anatomic specimens or other material obtained in the course of operations and examinations in a bacteriologic laboratory or laboratory of pathologic anatomy must be submitted to him for examination. (*e*) The sanitary record book of the member of the mutual aid society must be filled out or a copy of the clinical report on the member under treatment must be forwarded to the medical inspection service of the mutual aid society.

In case a member of a mutual aid society shall be in need of the services of a medical specialist, he shall have the right to choose whom he wishes from among the medical specialists who have agreed to treat members of the mutual aid society, but the mutual aid society, through the mediation of its medical inspector, shall have the right to exercise supervision over operations, expensive treatments and the frequency of visits. The foregoing considerations give expression to a new principle, that of medical supervision on the part of the mutual aid society and especially as regards the control of operative indications. The principle of such control as agreed on by the joint commission has been vigorously attacked by a large number of physicians. The *Scalpel* has contained a polemic condemning this principle, which, it is alleged, would make the physicians absolutely dependent on the personnel of the mutual aid societies; it would, in fact, constitute the beginning of bureaucratization.

Sixty Years a Practitioner

A rather unusual celebration in the annals of medicine was held this year in Belgium, when Dr. Dechesne of Saint Hubert completed his sixtieth year of medical practice.

An International Study on Rheumatism

The Société belge de physiothérapie invited recently Dr. Van Breemen of the Netherlands to deliver an address on the work of the association that he founded in Holland to combat rheumatism, which has since given rise to an international society with the same object in view. In his address, Dr. Van Breemen recommended that articular rheumatism be made the subject of serious study in all lands, especially with reference to the causative factors, the conditions of infection, blood conditions, nature of metabolism, percentage of calcium, lactic acid, fatigue, eosinophilia, anomalies of the skin (variations of temperature, vasomotor affections); study of terrestrial, social and climatic conditions, etc. A uniform questionnaire could be used in all parts of the world.

The international society demands scientific studies on the problem; also statistical studies and proposals with reference to social treatment. Local committees are expected to aid the international society.

It is estimated that rheumatism costs, in loss of wages salaries and labor, almost as much as does tuberculosis. The affection is, therefore, exceedingly important, much more important than most persons suspect. It is desirable to rouse public opinion to the existing menace. These recommendations were accepted and the Société de physiothérapie is endeavoring to make the suggested inquiry in Belgium and has appointed a committee to prepare a questionnaire to be sent to all the physicians of the kingdom, on the subject of rheumatism.

An Institute for the Study of the Pathology of Labor

The province of Liége continued in 1925, at the provincial institute for the study of the physiopathology of labor, the work of sanitary instruction that it began, the end of 1924, for the benefit of the working population of that industrial region. The institute has not confined its activities to caring for workmen suffering from occupational diseases but has endeavored to study and to determine precisely the effects that the present conditions of labor may have on the health of workmen. Several interesting researches have been begun and are being carried out in various fields of industrial pathology. It would of course be premature to attempt as yet to draw any definite conclusions from these studies on an extensive basis, but they have already opened up new unexpected vistas with reference to problems of the pathology of labor.

In 1925, in the Clinique du nystagmus des mineurs, forty-seven miners from twenty-two or more different communes of the industrial region received treatment. Of these forty-seven workmen suffering from nystagmus, thirty-five had resumed either their usual work or a form of reeducational work down in the mines, during 1925, after an idle period ranging from one to six months. Jan. 1, 1926, there were still twelve workmen idle on account of nystagmus.

The Clinique provinciale de maladies professionnelles gave, in 1925, care and treatment to 285 persons suffering, or alleged to be suffering, from occupational diseases. Of those 235 persons, 135 were found to be affected by ailments having no relation to their occupation. The 150 patients who actually presented industrial diseases belonged to the following classes: (1) industrial intoxication: fifteen were suffering from lead poisoning (five painters, five zinc workers, five plumbers, and three metallurgists); one patient was suffering from an intoxication caused by tin and one from an intoxication induced by benzine, and (2) pneumonoconiosis: fourteen miners were affected with pulmonary anthracosis; three molders with silicosis, and one workman with siderosis.

One workman was affected with chronic eczema and conjunctivitis, and five miners with rebellious furunculosis.

In the category of respiratory affections of industrial origin have been placed provisionally the clinical histories of 106 miners who present respiratory affections ranging from chronic bronchitis to pulmonary sclerosis and tuberculosis. These workmen are now being made the object of special researches with reference to the clinical history and, more particularly, the various classes of work that they performed down in the mines, with the view to determining the pathologic action exerted by various conditions of labor on the human organism.

BERLIN

(From Our Regular Correspondent)

Aug. 7, 1926.

German Vital Statistics for 1925

The total number of marriages in Germany for 1925 reached nearly 500,000, which is an average of 7.7 per thousand of population, and almost equal to the record for 1913, the last complete prewar year, which was 7.8 per thousand. The average for 1924 was only 7.1. The best figures for 1925 were furnished by Hamburg (9.4), Berlin (9.2) and Bremen (8.8). Far below the average for the *reich* are East Prussia, Bavaria and Upper Silesia. The birth rate for 1925 was 21.3, which is a slight improvement on the rate for 1924 (21.1) but still far below the prewar figure (27.7).

In 1925, there were 1,300,000 living births and 43,000 stillbirths. Whereas the average figure for stillbirths in 1913 was 15.7, in 1924 it dropped to 12.9 and in 1925 to 12.6. In 1913, infant mortality was 15.1 to each hundred living births. In 1925, the mortality rate was reduced to 10.5. The sections of Germany that have made the best progress in combating infant mortality are: Hesse and Hesse-Nassau, 7.2; Bremen, 7.6; Hanover, 7.9; Oldenburg, 8.1; Hamburg, 8.1, and Wurttemberg, 8.6. Considerably below the average for the *reich* are Berlin, 9.1; Schleswig-Holstein, 8.0; the Rhine Province, 9.5; the Palatinate, 9.4; Saxony, 9.0; Baden, 9.6; Brunswick, 9.7, and Lübeck, 9.3. The infant mortality is still very high in Upper Silesia (15), Lower Silesia (13)—in prewar times, however, 19.41; Brandenburg (12), Pomerania (12), province of Saxony (11.4), Bavaria (14.1) and the two Mecklenburg provinces (14.2). The lowest mortality rate in Germany was recorded in the small state of Waldeck (4.7), where there were, however, only 1,060 births. The total number of deaths of infants under 1 year of age was 14,000.

There were 608,000 deaths among persons more than 1 year old, or 2.2 per cent less than in 1924 and 11 per cent less than in 1913. The mortality rate of 9.9 was the best ever attained in Germany.

Statistics on the Physicians of Germany in 1926

On the basis of the popular Reichs-Medizinal-Kalender, which, under the editorship of Prof. Julius Schwalbe, appeared again this year, for the first time since the outbreak of the war, Prinzing of Ulm, well known as a medical statistician, has published in the *Deutsche medizinische Wochenschrift* some interesting statistics on German physicians. The total number of physicians in Germany, with a population of 63,000,000, is 45,000, or 7.1 physicians to each 10,000 inhabitants. In 1913, the number of physicians was 34,000, or 5.2

to each 10,000 inhabitants. The highest percentage of physicians is found in the three cities Hamburg, Bremen and Lübeck (from 10.5 to 10.8 per 10,000 population); then follows Hesse-Nassau with 9.3. In Berlin there are 229 gynecologists, 248 surgeons, 145 ophthalmologists, 174 otorhinolaryngologists, 381 dermatologists and venerologists, 66 specialists in gastro-intestinal affections and diseases of metabolism, 177 neurologists and psychiatrists, 16 lung specialists, 147 pediatricians and 318 specialists in miscellaneous branches of medicine. In each hundred physicians in Greater Berlin, 34.5 are specialists, and for each 10,000 inhabitants there are 13.7 general practitioners and 4.5 specialists. The total number of physicians in Greater Berlin is 5,513, and the total number of dentists is 1,121. There has been a marked increase in the number of woman physicians throughout the country. In 1913, there were only 195, while now there are 1,627, of whom 230 are assistants or "volunteers." There are 1,397 who have an independent private practice. Women physicians appear to prefer the large cities, in the main. In Greater Berlin alone there are 314; in cities of more than 100,000 inhabitants there are 565; in cities with from 50,000 to 100,000 inhabitants, 125; in cities with from 10,000 to 50,000 inhabitants, 196; in cities with from 5,000 to 10,000 inhabitants, 63, and in communes with less than 5,000 inhabitants, 134. In the small rural communities one finds very frequently women physicians who are married to physicians. In communities with less than 5,000 inhabitants, of 134 women physicians sixty-four were married to physicians. Women physicians are, for the most part, general practitioners. However, 116 are pediatricians and forty-three are gynecologists, while twenty-eight are specializing in both pediatrics and gynecology. There are twenty-eight women ophthalmologists, twenty-seven dermatologists and venerologists, fifteen neurologists, six surgeons, two otorhinolaryngologists, and twenty-seven specialists in internal and other diseases.

The Choice of a Successor to Professor Kraus

The medical faculty of the University of Berlin has proposed three candidates for the post occupied by Kraus: Professor Volhard of Halle, Professor Schittenhelm of Kiel, or Professor Eppinger of Freiburg. It will, according to law, be left to the minister of public instruction, the *Kultusminister* so called, to decide which of the three candidates he will appoint; in fact, he has the privilege of rejecting all three candidates proposed and of selecting a man not on the referred list.

Suicide of Physician and Wife Owing to Economic Distress

From a Berlin newspaper I cite the following, comment being superfluous:

> At their residence in the Brückenallee, Sanitätsrat Max Mayer, age 71, and his wife, age 61, were found dead in bed yesterday afternoon (August 6). They had taken poison with suicidal intent. Letters written a short time before the unfortunate deed reveal that the physician and his wife died as the result of a suicidal pact, the motive for which lay in economic distress. The physician summoned stated, after examination of the bodies, that death had occurred several days previously.

Marriages

Louis Lee Wilkinson, Greenville, N. C., to Miss Cosie Byrd Wyndham of Berryville, Va., in July.

Aaron Burleigh Spahr, Benhams, Va., to Miss Annie Bell Butcher of Richmond, June 12.

Neilson Hampden Turner to Miss Virginia Payne Hening, both of Richmond, June 12.

Robert Swanson Kyle to Miss Vera Hampton, both of Galax, Va., in June.

Hugh Henry Trout, Roanoke, Va., to Miss Alice Green of Hollins, in June.

Deaths

Sante Naccarati ⊕ New York; University of Naples, Italy, 1912; member of the American Psychiatric Association; assistant professor of neurology, New York Post-Graduate Medical School; on the staff of the Italian Hospital; aged 39; died, August 12, in Italy, of injuries received in an automobile accident.

Charles J. Schneider, Philadelphia; Jefferson Medical College of Philadelphia, 1896; member of the Medical Society of the State of Pennsylvania; Spanish-American War veteran; aged 56; died, August 17, at the Misericordia Hospital, of heart disease.

George Sherrill, Stamford, Conn.; Medical Department of Columbia College, New York, 1891; member of the Connecticut State Medical Society; for thirty years on the staff of the Stamford Hospital; aged 59; died in August, following an operation.

Harry Douglas Hull, Crystal Lake, Ill.; Rush Medical College, Chicago, 1891; member of the Illinois State Medical Society; formerly city physician and mayor; served during the World War; aged 59; died, August 2, of heart disease.

August Seibert, New York; University of Leipzig, Germany, 1877; formerly emeritus professor of pediatrics, New York Polyclinic Medical School; at one time on the staff of St. Francis Hospital; aged 72; died, July 29, at Giessen, Germany.

Frank J. McDaniels, Alpena, Mich.; Detroit College of Medicine and Surgery, 1892; member of the Michigan State Medical Society; aged 56; died, August 13, at the McRae Hospital, of pneumonia, following an appendectomy.

Oliver Andrew Menges ⊕ National Military Home, Kan.; Baltimore Medical College, 1908; member of the Maine Medical Association, and the Radiological Society of North America; aged 49; died, August 9, of septicemia.

Henry B. Furgerson, Halifax, N. C.; Jefferson Medical College of Philadelphia, 1882; member of the Medical Society of the State of North Carolina; aged 65; died, July 24, of acute nephritis and heart disease.

Edward J. Flanagan, Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1911; member of the Medical Society of the State of Pennsylvania; on the staff of the Mercy Hospital; aged 44; died, July 30.

Robert Lincoln Owens ⊕ Missoula, Mont.; American Medical Missionary College, Chicago, 1907; president of the Western Montana Medical Association; aged 41; died, August 10, following an operation.

Henry Howard Sherk ⊕ Pasadena, Calif.; Jefferson Medical College of Philadelphia, 1887; member of the Southern Surgical Association, and Western Surgical Association; aged 61; died, July 15.

Morand Lee Stallard, Appalachia, Va. (licensed, Virginia, 1884); member of the Medical Society of Virginia; aged 59; died, August 11, at the Beechurst Sanatorium, Louisville, of cerebral hemorrhage.

William Mansfield Wallace, Oklahoma City (licensed, Oklahoma, under the Act of 1908); aged 52; died, August 7, as a result of injuries received in an automobile accident several years ago.

William B. Bentley ⊕ Calvin, Okla.; St. Louis College of Physicians and Surgeons, 1896; president of the Hughes County Medical Society; aged 67; died, July 27, of heart disease.

William James Brown, Reading, Mass.; Tufts College Medical School, Boston, 1906; aged 63; died, July 17, at the Massachusetts Homeopathic Hospital, Boston, of endocarditis.

William Sterling Woody, Hopewell, Va.; Jefferson Medical College of Philadelphia, 1919; member of the State Medical Association of Virginia; aged 33; was drowned, August 9.

George Albert Mottram, Watkins, N. Y.; University of Vermont College of Medicine, Burlington, 1881; aged 76; died, August 12, at the Shepherd Hospital, Montour Falls.

Thomas Henry Saunders ⊕ Webster, Mass.; Maryland Medical College, Baltimore, 1904; formerly member of the board of health of Webster; aged 46; died, August 9.

Howell Beckham Gwin, Tulsa, Okla.; University of Louisville School of Medicine, 1888; served in the Spanish-American and World wars; aged 62; died, July 19.

⊕ Indicates "Fellow" of the American Medical Association.

Michael J. Kelly, Windsor Locks, Conn.; Baltimore Medical College, 1897; formerly member of the state legislature; aged 51; died, August 3, following a long illness.

John Edward Mayers, Santa Monica, Calif.; University of Vermont College of Medicine, Burlington, 1900; aged 49; died, May 22, at Los Angeles, of pneumonia.

Irvin Harris Farr ⊕ Holyoke, Mass.; Dartmouth Medical School, Hanover, 1906; member of the Radiological Society of North America; aged 43; died, April 23.

James Alvin Varier ⊕ South Bend, Ind.; Cincinnati College of Medicine and Surgery, 1876; formerly on the staff of the Epworth Hospital; aged 73; died, July 31.

William Alexander MacPherson, San Diego, Calif.; Trinity Medical College, Toronto, Ont., Canada, 1891; served during the World War; aged 60; died, April 10.

George W. Miller, Woodson, Ill.; Missouri Medical College, St. Louis, 1871; also a minister; aged 84; died, August 11, at the home of his niece in Scottville.

James M. Vanderburg ⊕ Albany, Ind.; Eclectic College of Physicians and Surgeons, 1893; Kentucky School of Medicine, Louisville, 1898; aged 57; died, August 4.

Charles Emerson Stewart, Hollywood, Fla.; Sioux City College of Medicine, 1896; member of the Iowa State Medical Society; aged 57; died, July 25.

James Fletcher McKinstry, Sr., Gainesville, Fla.; Long Island College Hospital, Brooklyn, 1866; Confederate veteran; aged 82; died, August 7.

William MacAlpin, New York; College of Physicians and Surgeons, Baltimore, 1886; aged 69; died, March 30, of cerebral hemorrhage.

Ludwig Mendelsohn ⊕ Norfolk, Va.; University of Berlin, Germany, 1898; on the staff of St. Vincent's Hospital; aged 54; died in July.

Alexander C. Foster ⊕ Owensboro, Ky.; University of Louisville School of Medicine, 1897; aged 63; died, August 11, of heart disease.

John Henry McCassy, Dayton, Ohio; Victoria University Medical Department, Toronto, Ont., Canada, 1887; aged 64; died, July 25.

Amos Wesley Knight, Attica, Ohio; Miami Medical College, Cincinnati, 1884; aged 70; died, July 31, following a long illness.

Robert Gavin Boak ⊕ New Castle, Pa.; University of Pittsburgh School of Medicine, 1896; aged 61; died, July 3, of appendicitis.

Albert Horton Peterson, Chicago; Keokuk Medical College, 1901; member of the Illinois State Medical Society; aged 50; died in July.

Frank X. Morris, Fairville, N. B., Canada (licensed, New Brunswick, 1910); aged 64; died recently, of carcinoma of the tongue.

Marshall K. Phillips, Bremen, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1881; aged 77; died, July 23.

Richard Augustin Forrest ⊕ Occidental, Calif.; Bellevue Hospital Medical College, New York, 1883; aged 66; died, July 11.

Frank G. Crowell ⊕ Rochelle, Ill.; Rush Medical College, Chicago, 1889; aged 62; died, August 7, of heart disease.

Charles L. Cawein, Louisville, Ky.; Louisville Medical College, 1886; aged 62; died, July 25, of heart disease.

Willard S. Vesper, Elma, Iowa (licensed, Iowa, 1886); aged 74; died, August 15, following a long illness.

Charles J. Habhegger ⊕ Watertown, Wis.; Rush Medical College, Chicago, 1897; aged 54; died, August 7.

Luke Corcoran, Springfield, Mass.; New York Homeopathic Medical College, 1868; aged 78; died, July 19.

Otto Kollme ⊕ St. Louis; St. Louis Medical College, 1887; aged 67; died, July 19, following a long illness.

Claude F. Ray, Milwaukee; Milwaukee Medical College, 1900; also a dentist; aged 57; died, July 4.

Bunyan H. McKinney, Los Angeles; Physio-Medical Institute, Cincinnati, 1866; died, August 2.

Jessee Michael Reynolds, Vilonia, Ark. (licensed, Arkansas, 1903); aged 82; died, June 20.

John J. Schweizer, Santaclaus, Ind. (licensed, Indiana, 1897); aged 78; died, July 21.

Thomas J. Dunlop, Atkinson, Ga.; Atlanta Medical College, 1893; aged 66; died, recently.

The Propaganda for Reform

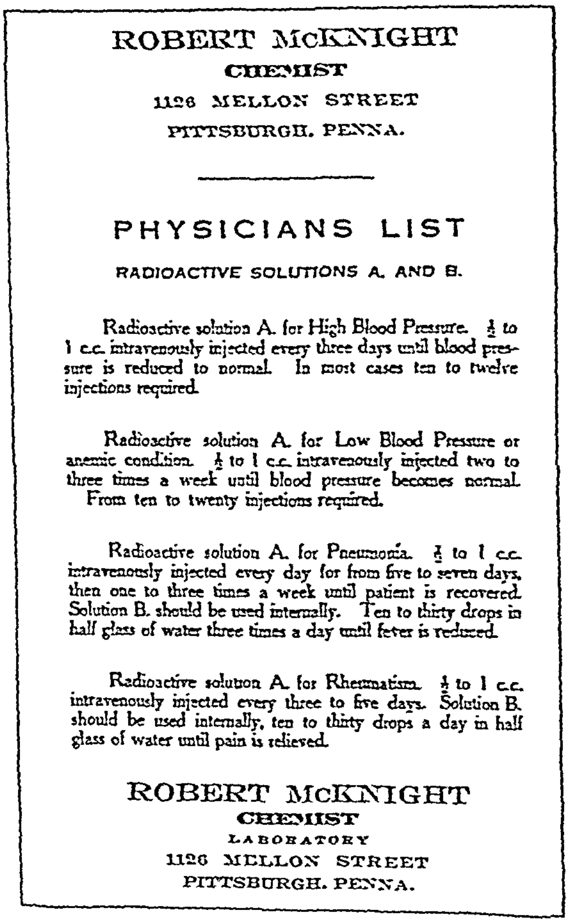
In This Department Appear Reports of The Journal's Bureau of Investigation, of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other General Material of an Informative Nature

RAD-X-SOLUTION A AND RAD-X-SOLUTION B NOT ACCEPTABLE FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. Puckner, Secretary.

"Rad-X-Solution A" and "Rad-X-Solution B," marketed by Robert McKnight, Pittsburgh, are stated to be "radioactive solutions" which are prepared from "pitchblende or ore carrying radioactive ingredients of similar character and quantity." A complicated method for their preparation was furnished the Council. It was stated that "the strength of the radioactive emanations of the solutions is standardized at the potency established by the tests at the Bureau of Standards at Washington, D. C." This claim of strength evidently referred to a report of the U. S. Bureau of Standards which was submitted as evidence. The report was dated 1921, addressed to the Radium Remedies Co., and stated that of two solutions, No. 1 had been found to have a gamma radiation approximately equivalent to that from 0.0009 milligram of radium and No. 6 to have a gamma radiation approximately equivalent to that from 0.0006 milligram of radium. A gamma ray test, made with a very sensitive electroscope, of the specimens of Rad-X-Solution A and Rad-X-Solution B which were received from Robert McKnight, however, showed no signs of radioactivity in either sample.



ROBERT McKNIGHT
CHEMIST
1126 MELLON STREET
PITTSBURGH, PENNA.

PHYSICIANS LIST

RADIOACTIVE SOLUTIONS A. AND B.

Radioactive solution A. for High Blood Pressure. ½ to 1 c.c. intravenously injected every three days until blood pressure is reduced to normal. In most cases ten to twelve injections required.

Radioactive solution A. for Low Blood Pressure or anemic condition. ½ to 1 c.c. intravenously injected two to three times a week until blood pressure becomes normal. From ten to twenty injections required.

Radioactive solution A. for Pneumonia. ½ to 1 c.c. intravenously injected every day for from five to seven days, then one to three times a week until patient is recovered. Solution B. should be used internally. Ten to thirty drops in half glass of water three times a day until fever is reduced.

Radioactive solution A. for Rheumatism. ½ to 1 c.c. intravenously injected every three to five days. Solution B. should be used internally, ten to thirty drops a day in half glass of water until pain is relieved.

ROBERT McKNIGHT
CHEMIST
LABORATORY
1126 MELLON STREET
PITTSBURGH, PENNA.

In the advertising, which accompanies the trade packages, "Radioactive Solution A" is recommended to be administered intravenously "for High Blood Pressure," "for Low Blood Pressure or anemic condition," "for Pneumonia," "for Rheumatism"; "Radioactive Solution B" is recommended for oral administration as an accompaniment to Solution A in pneumonia and rheumatism. As evidence for the value of these solutions, a number of photostatic copies of letters from physicians were submitted. These testimonials are quite worthless, being uncritical and merely casual opinions.

In view of the resemblance of the name "Rad-X" to that of an advertised line of alleged radioactive products called "Radio-X" and marketed by one Robert McKnight, the Bureau of Investigation was asked for a report. The following was submitted:

"The Radium Remedies Co. of Pittsburgh, Pa., incorporated by one Robert McKnight under the laws of Pennsylvania, has for four or five years been putting out a line of crude nostrums under the generic name 'Radio-X.' The line consisted of the following:

Radio-X Emanation Water Tubes
Radio-X Dental Tubes
Radio-X Healing Pads
Radio-X Goitre Pads
Radio-X Neck Pads
Radio-X Eye Pads
Radio-X Insoles
Radio-X Complexion Soap
Radio-X Ointment
Radio-X Tablets
Radio-X Suppositories
Radio-X Greaseless Cold Cream

"Newspaper advertisements have appeared telling of cures of blindness, asthma, 'stomach trouble,' 'catarrh,' burns, 'bladder trouble,' etc., and recommending 'Radio-X' for cancer, tuberculosis, diabetes, pernicious anemia and many other things. Booklets describing the various products and containing the usual farrago of testimonials have been distributed. The concern, in addition to putting out its line of 'patent medicines' had also 'The Radio-X-Sanatorium—Robert McKnight, President.' Letters on the stationery of the 'Radio-X-Sanatorium' and signed Robert McKnight, were sent to laymen in an attempt to sell stock in the Radium Remedies Co. in order to get 'greater working capital.' The McKnight letter claimed that it was a '6 per cent guaranteed interest bearing First Mortgage Gold Bond with 10 per cent bonus in stock, really making a return of 16 per cent on your investment.' The Radium Remedies Co. scheme was crude and blatant quackery."

The Council finds Rad-X-Solution A and Rad-X-Solution B inadmissible to New and Nonofficial Remedies because they are preparations of indefinite and uncontrolled composition, because they are advertised indirectly to the public, because the claims are unwarranted, and because they are marketed under non-informing names.

MORE MISBRANDED NOSTRUMS

Abstracts of Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

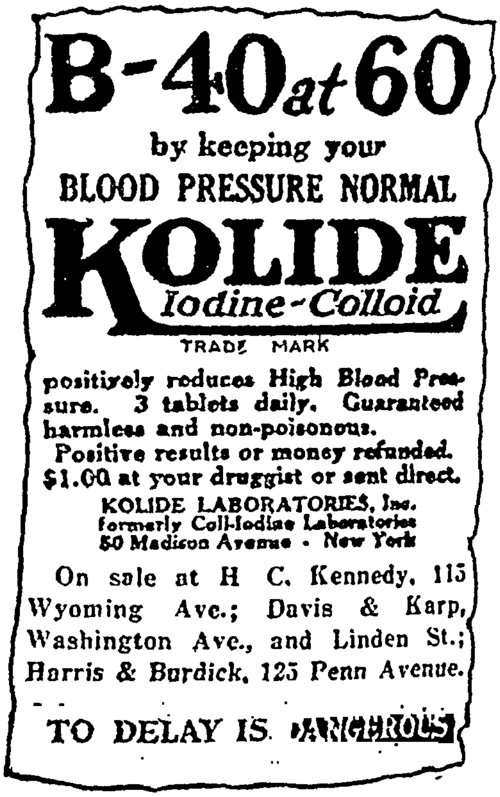
Vita Rica Tonic Pills and Laxative.—In December, 1925, the government reported the case of misbranding of "Vita Rica Tonic Pills and Laxative." This product had been shipped by the Vita Rica Pharmacal Company, New York, to Porto Rico, in September, 1924. The so-called tonic pills, when analyzed by the Bureau of Chemistry, were reported to contain compounds of iron, potassium, manganese, mercury, arsenic, zinc, phosphorus and strychnine. The government officials charged that the product was misbranded, because the claims for curative effects were false and fraudulent. The label declared, in effect, that the product was essentially a cure for nervous debility, neurasthenia, leucorrhea and impotence, and that it was a blood purifier and builder. In November, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—*(Notice of Judgment 13625, issued December, 1925. Chem. Suppl. 203.)*

King's Formula.—William C. King of Scott City, Kansas, shipped, in August, 1924, from Kansas to Minnesota, a quantity of "King's Formula," which the government declared misbranded. The Bureau of Chemistry reported that analysis showed it to consist of a liquid in two layers, composed of ether, alcohol, iodine, eucalyptus oil, water and formaldehyde. Some of the curative claims appearing on the label were:

> "For the Treatment of Tuberculosis and the Lungs, Chronic Coughs, Colds, Asthma and Sore Lungs caused from Pneumonia or 'Flu.'
>
> "Don't Suffer with Tuberculosis, Chronic Coughs, Colds, Asthma, Pneumonia, 'Flu' and Sore Lungs."

The wording of the claims was such as to lead the public to believe that this product was a cure for consumption—a claim that the government declared was false and fraudulent, since the preparation contained no ingredient capable of producing any such effect. In June, 1925, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—*(Notice of Judgment 13627; issued December, 1925. Chem. Suppl. 203.)*

Kolide.—The Kolide Laboratories of New York shipped, in March and July, 1925, a quantity of "Kolide" which the federal authorities declared was misbranded. When analyzed by the Bureau of Chemistry it was found to consist of tablets composed of starch, sugar, gum and iodine, each tablet containing approximately one-fifth grain of iodine. Some of the claims made on or in the package were:



B-40 at 60

by keeping your

BLOOD PRESSURE NORMAL

KOLIDE

Iodine-Colloid

TRADE MARK

positively reduces High Blood Pressure. 3 tablets daily. Guaranteed harmless and non-poisonous.

Positive results or money refunded.

$1.00 at your druggist or sent direct.

KOLIDE LABORATORIES, Inc.
formerly Coll-Iodine Laboratories
50 Madison Avenue · New York

On sale at H C. Kennedy, 115 Wyoming Ave.; Davis & Karp, Washington Ave., and Linden St.; Harris & Burdick, 125 Penn Avenue.

TO DELAY IS DANGEROUS

> "Kolide is of great benefit in the treatment of diseases which have baffled the medical world. Its marvelous properties are highly recommended for the treatment of Hardening of the Arteries, High Blood Pressure, Goiter, Obesity, Rheumatism, Neuritis, Sciatica, Lumbago, Anemia, Run Down Condition, etc."
>
> "Obesity is unnecessary fat, which Kolide will remove without discomfort. No starving, dieting or exercising is needed, as Kolide reduces by fat absorption."

These and similar claims were declared false and fraudulent, and, in November, 1925, the court entered judgment of condemnation and forfeiture and ordered that the product be destroyed.—*(Notice of Judgment 13889; issued February, 1926. Chem. Suppl. 208.)*

Lithadonis.—The American Apothecaries Company, Long Island City, New York, consigned a quantity of "Lithadonis" to a concern in Philadelphia. Analysis showed the preparation to consist of tablets containing compounds of lithium and iodine, salicylate, caffein and a material derived from plant drugs, including a laxative. The product was falsely and fraudulently labeled as a remedy and cure for lumbago, sciatica, gout, gonorrheal rheumatism, etc. On November 18, 1925, the court entered judgment of condemnation and forfeiture and ordered that the product be destroyed.—*(Notice of Judgment 13869; issued February, 1926. Chem. Suppl. 208.)*

Lippi Blood Purifier Tonic.—In April, 1925, the A. F. Lippi Laboratories, Philadelphia, shipped into Massachusetts a quantity of "Dr. Lippi Blood Purifier Tonic," which government officials declared was misbranded. Analyzed by the Bureau of Chemistry, the preparation was reported to consist essentially of compounds of iron, arsenic, strychnine, potassium and iodine, with extracts from plant drugs, including a laxative, alcohol, sugar, flavoring and water. Some of the claims made on the label of this preparation were:

> "For the Treatment of Rheumatism, Sciatica, Vertigo, Torpid Liver, Anemia, Indigestion, Boils, Syphilis, Scrofula, Pimples, Insomnia, Headaches, Nervousness and other Impurities of the Blood."
>
> "Dr. Lippi Blood Purifier Tonic is certainly the best tonic purifier of the blood, called miraculous by everyone."

These and similar claims were declared by the government officials to be false and fraudulent, and, on September 23, 1925, the court entered judgment of condemnation and forfeiture and ordered that the product be destroyed.—*(Notice of Judgment 13780; issued December, 1925. Chem. Suppl. 206.)*

Correspondence

DIETARY TREATMENT OF PERNICIOUS ANEMIA

To the Editor:—The paper on the treatment of pernicious anemia by a special diet (The Journal, August 14, p. 470) recalls the advocacy of red bone marrow (which the authors state has the nutritional composition of liver and kidneys) by the late Francis Delafield, in the treatment of pernicious anemia. He used an extract of bone marrow, or had the butcher slice beef bones, which were then toasted and spread on bread. Bones prepared in this way could be made into a broth or jelly.

Has pernicious anemia shown an increase in frequency with the diminution of meat eating? Some increase would be expected with present diagnostic methods. Years ago liver and bacon was a common breakfast, kidney stew a not unusual supper.

C. J. Noonan, M.D., Brooklyn.

PHYSIOLOGY OF SWEAT

To the Editor:—As a result of collaboration with ten of my students during the last two months, we have been able to demonstrate the following constituents as constant in the sweat of normal individuals: viz., amino-acids, uric acid and sugar. Furthermore, we have discovered that sweating produced by heat has a tendency: (1) to reduce the blood sugar; (2) to increase the red count; (3) to increase the specific gravity of the blood, and (4) to decrease the alkali reserve.

G. A. Talbert, University, N. D.
Professor of Physiology, University of
North Dakota School of Medicine.

NEW METHOD OF BLOOD TRANSFUSION

To the Editor:—In the August 14 issue of The Journal appears "A New Method of Blood Transfusion" by Dr. James J. Donahue of St. Louis. The writer is evidently not acquainted with Brines' paper in the *Archives of Surgery* (**12**:124-139 [Jan.] 1926), which describes in some detail the same (and other) modifications of the original Unger machine and technic. In justice to Dr. Brines, the reported method can hardly be called "new."

Edward G. Waters, M.D., Jersey City, N. J.

PHYSICIANS FAILING TO REPORT DISEASES

To the Editor:—A frequent barrier to city epidemiologic work is the failure of physicians to report communicable and venereal diseases to city health departments. The death certificate may be the first notice of a contagious disease. This is especially true of such diseases as typhoid, epidemic meningitis, tuberculosis and the common diseases of childhood. Reports from medical journals indicate that frequently physicians have been prosecuted by state authorities for failure to report communicable diseases, but the careless practice is still continued. A great improvement can be made if the medical colleges will devote more time to this phase of the work—if medical students are taught the importance of reporting births, communicable diseases and venereal diseases. In this city a new system is in practice and is effective. Every physician who wilfully fails to report communicable diseases is given a written notice with a copy of the sanitary code covering the matter on the first offense. The second time prosecution follows. It applies to all physicians regardless of age, popularity or standing in the profession.

S. S. Beverly, M.D., Toledo, Ohio.
Commissioner of Health.

POISON GAS FOR MOSQUITOES

To the Editor:—Some time ago, I used to be in touch here with the late Dr. Carlos John Finlay, before he returned to Cuba and the Hawaiian Islands. I decided therefore to write to you about my discovery. One of the worst diseases in our country is malarial fever, which, of course, is caused by the bite of mosquitoes. Some time ago, I conceived the idea that the best agent for their destruction would be poison gas. All swamps could be treated with gas, and the mosquitoes, together with the larvae and nymphs that live in the water, could be destroyed. I thought the matter was of sufficient importance to present it to the president of Turkey, Mustapha Kemal Pasha, and in March, 1925, the health department of Constantinople was asked to render its opinion in the matter. Laboratory experiments were made and my observations were confirmed and my method was approved. Sept. 1, 1925, the matter was brought before the medical congress held in the Turkish capital, Angora, where my method was again approved. In the near future, I am going to publish an article on the subject and let other countries know about my method of combating the worst enemy of mankind in the tropical countries. Unfortunately, this poison gas was first used to destroy mankind, but now the gas is to be employed to prolong human life and to be a service to mankind.

I would be pleased to have you state in your esteemed journal that I have discovered the value of poison gas for the destruction of mosquitoes.

Hulussi Mustafa, M.D., Diarbekir, Turkey.

SPECIFIC GRAVITY OF URINE

To the Editor:—May I call your attention to the fact that the method for the determination of the specific gravity of a few drops of urine, published in The Journal, August 14, was described by Professor Noeggerath, University of Freiburg, and me in the *Archiv für Kinderheilkunde* (**70**:161), where it is critically discussed. As we have shown there, the attempt to use the exact floating point for the determination is inaccurate. However, Kirkpatrick and Kling's use of a nonvolatile fluid theoretically seems to have a distinct advantage.

Herbert S. Reichle, M.D., Cleveland.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ROENTGEN-RAY TREATMENT OF RINGWORM

To the Editor:—In a case of ringworm involving the inner portion of the upper part of the thighs (superficial variety) with the deep-seated variety involving the scrotum, causing a distinctly lumpy and nodular condition, is roentgen-ray therapy ever used in this region? The case is of some years' standing and does not seem to respond to the usual treatment of drug therapy. I realize the danger of roentgen-ray therapy on account of the region involved. Please omit name.

M.D., Wisconsin.

Answer.—The roentgen ray is used by many men in very small doses for ringworm of the hands and feet. It is a useful procedure in subacute cases. It might be equally useful when the lesions involve the inner sides of the thighs. It can be applied with safety, as far as sterilization is concerned, to the scrotum, but it would have to be done in small doses and would better be avoided unless one is very sure of his roentgen-ray technic.

TUBERCLE BACILLI IN MILK OF COWS REACTING TO TUBERCULIN

To the Editor:—Under Queries and Minor Notes, June 26, you state that "about 25 per cent of reactors have been found on investigation to eliminate tubercle bacilli with the milk." Please advise the source of these data.

W. P. Brown, M.D., Philadelphia.

Answer.—The figure given is taken from the investigations of Mohler and of Gehrmann and Evans. Mohler (Bull. 44, Bureau of Animal Industry, United States Department of Agriculture, Washington, 1903) examined the milk from fifty-six cows reacting to tuberculin but showing no clinical signs of tuberculosis. The milk was examined over a period of several months, guinea-pigs being fed or inoculated with samples. About 600 guinea-pigs were used in the experiment. Tubercle bacilli were detected in the milk of thirteen cows, or 23 per cent of the original fifty-six, by this method.

Gehrmann and Evans (Fourteenth Annual Report of the State Board of Live Stock Commissioners of Illinois, Springfield, Ill., 1899) examined the milk of forty-one cows reacting to tuberculin. Tubercle bacilli were found on microscopic examination in the milk of 36.6 per cent of these, and in 24.4 per cent by animal inoculation. In a previous study of the milk of thirty-eight reacting cows, Gehrmann had found tubercle bacilli by guinea-pig inoculation in the milk of 15.7 per cent.

Others, without committing themselves to a percentage figure, feel that the evidence is sufficient to warrant the certainty that cattle not clinically tuberculous, but reacting to tuberculin, eliminate tubercle bacilli occasionally in their milk. (Rabinowitsch: *Ztschr. f. Tiermed.* **8**:202, 1904. Calmette: L'infection bacillaire et la tuberculose, ed. 2, Paris, 1922, p. 421).

EXAMINATION OF SPINAL FLUID

To the Editor:—1. Is there any special time of day, or any particular hour or time following meals, that spinal fluid should be removed for examinations, especially Wassermann examinations? 2. Is there any special position for the patient to be in? 3. What are the most prominent symptoms of brain tumor (with special bearing on contraindications for spinal puncture)? 4. Other contraindications for removal of spinal fluid?

Robert E. Jameson, M.D., Davenport, Iowa.

Answer.—1. The question of the influence of food on the Wassermann reaction has been raised from time to time. In some hospitals, blood for the Wassermann test is drawn as a routine before breakfast. This is done to avoid a possible false positive reaction due to ingestion of lipoid substances. In most hospitals, however, the food factor is discarded. As to the cerebrospinal fluid, the Wassermann reaction seems to bear no relation whatever to the ingestion of food. Even if food would affect the Wassermann reaction on the blood, the amount of lipoid substance that would enter the cerebrospinal fluid would be so little that it could have no effect on the cerebrospinal fluid Wassermann reaction. Of late, a number of papers have appeared dealing with the question of the relation of the cerebrospinal fluid sugar to the time of the day, especially with regard to ingestion of food. Goodwin and Shelley (The Sugar Content of the Cerebrospinal Fluid and Its Relation to the Blood Sugar, *Arch. Int. Med.* **35**:242 [Feb.] 1925) found that the maximal rise in cerebrospinal fluid sugar after the injection of dextrose into the blood was reached at the end of four hours, with the return to normal at the end of six hours. Levinson (Comparative Sugar Content of Blood and of Cerebrospinal Fluid in Various Conditions, *Am. J. Dis. Child.* **30**:774 [Dec.] 1925) found that the injection or ingestion of dextrose increases the cerebrospinal fluid sugar, but that no time can be set for the period of the maximal increase. In most cases studied by him, the greatest increase was between two and three hours after the injection of dextrose both in meningitic and in nonmeningitic cases. In some cases, however, there was either no increase in the sugar, or the maximal sugar curve was reached before the three hour period was up. Whenever the amount of sugar in the cerebrospinal fluid may be of diagnostic value, such as in the differential diagnosis between anterior poliomyelitis, in which the sugar is usually normal (from 50 to 80 mg. per hundred cubic centimeters of cerebrospinal fluid), and tuberculous meningitis, in which the sugar is often decreased to 20 mg. or less per hundred cubic centimeters of fluid, it might be best to perform the spinal puncture three hours after the ingestion of food, if possible. At no time, however, should one wait with the puncture in patients suspected to be suffering from meningococcus meningitis. The amount of sugar ingested in food is not large enough to overshadow the marked decrease in sugar or even its entire absence, which is often the case in all suppurative meningitides. Furthermore, the time lost before administering the antimeningococcus serum may be disastrous to the patient.

2. The patient should lie on his side during the puncture. Some clinicians prefer to have the patient lie on his right side at the edge of the table. Spinal puncture done with the patient in the sitting position carries with it the danger of herniation of the brain caused by the sudden removal of a large amount of fluid. Some of the cases of death following spinal puncture reported in the literature have been done with the patient in the sitting position.

3. Some clinicians consider symptoms of brain tumor, especially of the cerebellum, a contraindication for spinal puncture because of the possibility of producing a herniation of the brain by the sudden release of cerebrospinal fluid. However, when a manometer is used or when care is taken not to collect too much fluid at one sitting, or to release the cerebrospinal fluid too suddenly, and when the puncture is done with the patient lying down, spinal puncture may be resorted to even in cases of brain tumor.

4. It is inadvisable to remove cerebrospinal fluid from elderly patients suffering from cerebral hemorrhage, the first twelve to sixteen hours after the symptoms of hemorrhage manifest themselves. Removal of cerebrospinal fluid the first few hours after the hemorrhage has occurred may disturb the blood clot in the ventricles or meninges. After the first twelve to sixteen hours, removal of cerebrospinal fluid is indicated in all cases of brain hemorrhage manifesting symptoms of increased intracranial pressure. In new-born infants, the diagnosis of cerebral hemorrhage is no contraindication for the removal of cerebrospinal fluid. Erysipelas of the lumbar region is a contraindication for spinal puncture. In that case, however, ventricular puncture may be done in infants and cisternal puncture may be done in infants, older children and adults.

DERMATITIS OF HANDS IN DENTISTS

To the Editor:—Several dentists have consulted me on account of a dry, scaling eczema of the palmar surface of the hands. They attribute the condition to the use of procaine-epinephrine solution on their patients. Which constituent causes the dermatosis and what is the proper treatment? Kindly omit my name.

J. K. N., *Illinois.*

Answer.—It is not infrequent for dermatologists to see dry scaling eczema, or sometimes more acute eczema, on the palmar surface of the hands and on the fingers of dentists, caused by procaine hydrochloride. There is no such dermatitis from epinephrine solutions. Of course, they can get dermatitis from other irritants with which they come in contact in their work and to which they are sensitive, but there is hardly any other one that is so commonly at fault as procaine. The only successful treatment is to avoid contact with this solution.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

American Board for Ophthalmic Examinations *Colorado:* Denver, Sept 13 Sec, Dr. William H. Wilder, 122 S Michigan Ave, Chicago.

American Board of Otolaryngology. Colorado: Denver, Sept. 13. Sec, Dr H W. Loeb, 1402 So Grand Blvd, St Louis, Mo.

Arizona: Phoenix, Oct 5 Sec., Dr. W. O. Sweek, Phoenix

California: Sacramento, Oct. 18-21. Sec., Dr. Charles B Pinkham, 906 Forum Bldg, Sacramento

Colorado: Denver, Oct. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg, Denver.

Connecticut: State Board of Healing Arts, New Haven, Oct 9 Prerequisite to license examinations. Box 1895, Yale Station, New Haven

District of Columbia. Oct. 12. Sec., Dr. Edgar P. Copeland, Suite 110, 1801 Eye Street, Washington

Florida: Tallahassee, Oct. 12-13. Sec., Dr. William M. Rowlett, Box 603, Tampa

Georgia: Atlanta, Oct. 12-14 Sec., Dr C. T. Nolan, Marietta

Idaho Boise, Oct 5 Commissioner of Law Enforcement, Mr. F. A Jeter, Boise

Illinois. Chicago, Oct 5-7. Supt., Regis. and Education, Mr. V. C. Michels, Springfield, Ill

Iowa Des Moines, Oct. 12-14. Commissioner, Dept of Health, Dr. Henry Albert, Des Moines.

Kansas Topeka, Oct 12 Sec, Dr Albert S Ross, Sabetha

Michigan: Lansing, Oct 12-14 Sec., Dr Guy L Connor, 707 Stroh Bldg, Detroit.

Minnesota. Minneapolis, Oct 5-7. Sec, Dr A E. Comstock, 636 Lowry Bldg, St Paul

Montana: Helena, Oct 5-7. Sec, Dr S A. Cooney, Helena

Nevada: Carson City, Nov. 1 Sec, Dr Simon L. Lee, Carson City

New Hampshire. Concord, Sept. 9-10. Sec, Dr. Charles Duncan, Concord

New Jersey: Trenton, Oct. 19-20. Sec, Dr. Charles B Kelley, Trenton

New Mexico: Santa Fe, Oct. 11-12. Sec, Dr. W. T. Joyner, Roswell

New York. Albany, Buffalo, New York and Syracuse, Sept 20-23 Chief, Professional Exams Bureau, Mr. Herbert J. Hamilton, State Education Building, Albany.

Oklahoma: Oklahoma City, Sept. 14-15. Sec., Dr. J. M. Byrum, Shawnee.

Rhode Island. Providence, Oct. 7-8. Sec., Dr. B U. Richards, Providence

Utah Salt Lake City, Oct. 5 Director, Mr. J. T. Hammond, 412 State Capitol Bldg, Salt Lake City

Wisconsin Basic Science Board, Madison, Sept. 18. Sec., Dr. M F. Guyer, University of Wisconsin, Madison

Wyoming: *Cheyenne, Oct 4-6* Sec., Dr. G. M. Anderson, Cheyenne

Kansas June Examination

Dr. A S Ross, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Kansas City, June 15, 1926 The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Fifty-nine candidates were examined, all of whom passed. Fourteen candidates were licensed by reciprocity. The following colleges were represented:

College PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine	(1925)	89.3
Howard University School of Medicine	(1925)	85
Northwestern University Medical School	(1926)	92.5, 91.4
Rush Medical College	(1926)	88.1, 89, 89.3, 89.6 92.9
Kansas Medical College, Topeka	(1898)	84
University of Kansas School of Medicine	(1926)	86.2, 87.5, 87.9, 88.3, 88.5, 88.8, 88.9, 89, 89.2, 89.2, 89.2, 89.3, 89.5, 89.5, 89.7, 90, 90.1, 90.2, 90.5, 90.7, 90.7, 90.7, 91, 91, 91.1, 91.1, 91.1, 91.1, 91.2, 91.3, 91.4, 91.4, 91.6, 92.2, 92.3, 92.4, 92.6
Eclectic Medical College, Cincinnati	(1926)	88.1, 89.3
Johns Hopkins University Medical Department	(1926)	89.8
St Louis University School of Medicine	(1925)	90.5, 91.8, 91.8, (1926) 87.1, 89.7
Washington University School of Medicine	(1924)	90.3, (1925) 91.5, (1926) 88.2, 91

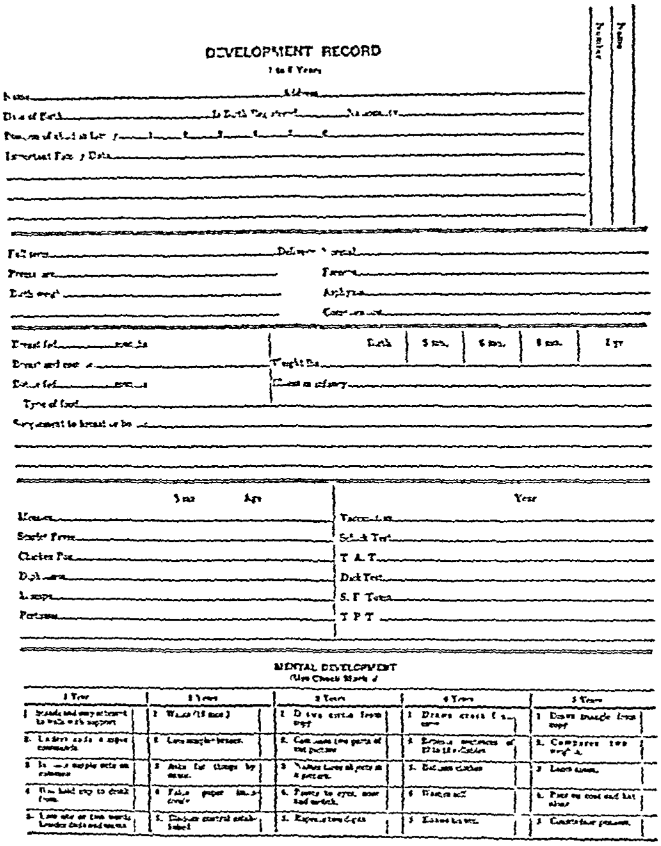
College LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University School of Medicine	(1913)	Dist. Colum.
Bennett Medical College, Chicago	(1910)	Oklahoma
Rush Medical College	(1878)	Nebraska
Medical College of		Indiana
State University of		Iowa
University of Mich		Michigan
University of Minn		nnesota
Washington Unive		Colum.
Creighton Universi		ebraska
University of Nebraska College of Medicine	(1925)	Nebraska
Western Reserve University School of Medicine	(1925)	Ohio
University of Oklahoma School of Medicine	(1918)	Oklahoma
University of Vermont College of Medicine	(1903)	New Hamp.

Miscellany

DEVELOPMENT RECORD FROM ONE TO SIX YEARS

BORDEN S. VEEDER, M.D.
St. Louis

The recognition of the importance of the periodic physical or health examination has been making rapid headway in the practice of preventive medicine, and we may regard it as an accepted principle of medical practice. In childhood the periodic examination has a double purpose: It recognizes incipient physical defects or disease, which *is the primary* purpose of the adult periodic health examination, and in addition it is a method of watching and measuring the development of the child which is of equal importance from the standpoint of preventive *medicine in childhood* years.



DEVELOPMENT RECORD

Type of food

Year

Chicken Pox

T. A. T.

Dick Test

T P T

MENTAL DEVELOPMENT

Fig 1—Page 1 of the development record Space is furnished for important data during the period of infancy, and, in addition, record space for the exanthems and for immunization At the bottom, simple tests of mental devlopment are shown, the latter being only sketchy and covering only a few of the essential things a child should be able to do at a given age

The use of weight charts in infancy and of record forms during the school years has become a universal custom, and numerous satisfactory record forms are available. A need has developed, however, for a record form for the preschool years which takes cognizance not only of the results of the physical examination but also for the recording of development. For this reason the accompanying form has been prepared by Dr. George T. Palmer and myself with the criticism and suggestions of the Medical Advisory Committee of the American Child Health Association, 370 Seventh Avenue, New York, from whom the record form may be obtained.

The record form was prepared primarily with the view of meeting the needs of the physician in private practice. It is not intended to replace the usual routine record of the patient, but to furnish a compact, continuous record of the development of the child from the first to the sixth year. In use it is suggested that the record be made out in duplicate; one copy being given to the parent to keep. The purpose of this is to stimulate the interest of the parent in the importance of watching the development of the child and encouraging the parent to have the child examined annually from this standpoint rather than from the standpoint of the treatment of disease.

The record is printed on heavy bond paper and measures about 8 by 11 inches when folded, suitable for filing in an ordinary record file.

Page 1 (fig. 1) furnishes space for a brief summary of the development during infancy: a space for entering data in regard to the ordinary infectious diseases of childhood; a record of immunization, and a brief form for recording mental development.

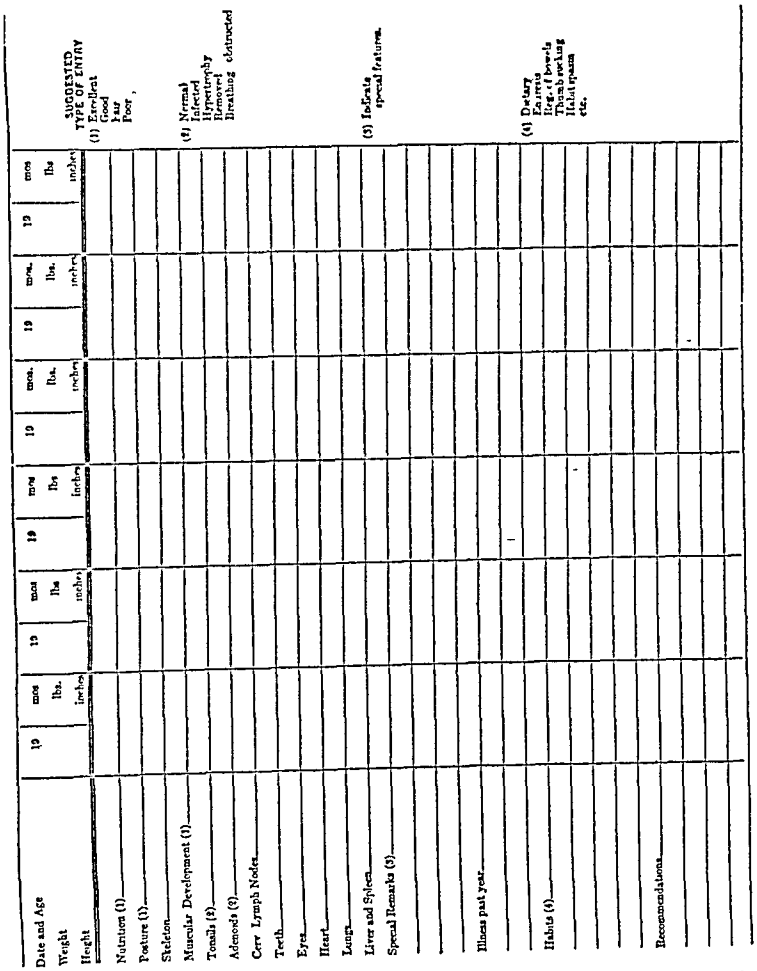

SUGGESTED TYPE OF ENTRY
(1) Excellent Good Fair Poor
(2) Normal Infected Hypertrophy Removed Breathing obstructed
(3) Indicate special features
(4) Dietary Eating Reg. of bowels Thumb sucking Habit spasm etc.
19
mos
lbs
inches
Date and Age
Weight
Height
Nutrition (1)
Posture (1)
Skeleton
Muscular Development (1)
Tonsils (2)
Adenoids (2)
Cerv Lymph Nodes
Teeth
Eyes
Heart
Lungs
Liver and Spleen
Special Remarks (3)
Illness past year
Habits (4)
Recommendations

Fig. 2.—Page 2: a simple form for recording the examination of the chief points encountered at this age period, and intended for brief remarks.

Page 2 (fig. 2) is a record form for yearly physical examinations, considering only the essential and most important items.

Page 3 (fig. 3) is a specially designed chart for recording growth (measured in height and weight), which at the same time gives a visual comparison with averages.

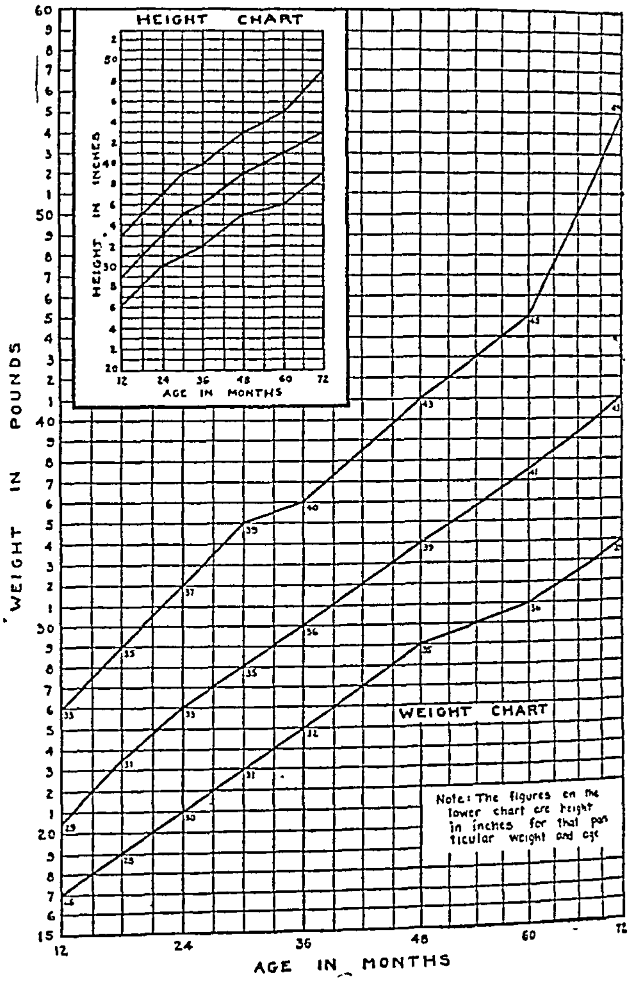
Page 4 contains a record (fig. 4) for home weighing every three months to show periodic gain; space for notes, and explanatory data of the use of the form.

608 Humboldt Building.

Angina Minor.—The causes which induce anginal pain have this characteristic—they are such as to bring about a rapid strain on the arterial side of the circulation and especially on the left ventricle. The two common exciting factors are effort and exposure to cold. In a large proportion of anginal patients there is either a lesion of the coronary arteries or persistent hyperpiesis.—Hay, John, M.D., *Brit. M. J.*, July 10, 1926.

THE CHILD; HIS NATURE AND HIS NEEDS

The Children's Foundation was incorporated, not for profit, in Valparaiso, Ind., in 1921, and funds were made available for establishing the organization and developing a program of work. The first step was to gather valuable knowledge regarding the nature and education of the child in a volume to which many specialists contributed their conceptions of various phases of child life. The essays included are divided into three groups, including our knowledge of the child's nature, of its well being and of education. The book well constitutes a basis for any intensive study of the child. It is also sufficiently personal and practical to be of value to any parent who is confronted with the need of general advice. Books as well printed and as handsomely illustrated as this cost far more to produce than the price at which the volume issued by the Children's Foundation is sold.



Based on Woodbury Weight-Height-Age Tables
American Child Health Association
370 Seventh Ave., New York City

Fig. 3.—Page 3: Two specially drawn charts permit the recording of growth as measured by height and weight. On each chart the center line is an average for boys and girls, the upper and lower lines being average extremes. A child, aged 2 years, weighing 27 pounds (12 Kg), would be recorded on the weight chart by a mark at the point at which the vertical age line and the horizontal weight lines cross. The height in inches is recorded in figures at one side, and a glance will show whether the child is average weight for height. In this case the average height should be about 34 inches. If, for example, the height is under 33 inches, the chart would show that the weight is above average; and if the height is 37 inches, the child is obviously below average weight for his height. Subsequent measurements, made from time to time, would be connected by a line giving the gain of growth and development. The child's height may be marked on the height chart and the points connected by a line in a similar manner.

HOME WEIGHING RECORD

	19	19	19	19	19	19
January	lbs	lbs	lbs	lbs	lbs	lbs
April	lbs	lbs	lbs	lbs	lbs	lbs
July	lbs	lbs	lbs	lbs	lbs	lbs
October	lbs	lbs	lbs	lbs	lbs	lbs

Fig. 4.—Table on page 4. Below this is space for notes, and suggestions for using the development record.

Book Notices

A POPULAR ENCYCLOPEDIA OF HEALTH. By Lee K. Frankel, Ph.D., Second Vice President, Metropolitan Life Insurance Companay, and Donald B. Armstrong, M.D., Sc.D., Assistant Secretary, Metropolitan Life Insurance Company. With the collaboration of Genevieve Fox. Cloth. Price, $3.50. Pp. 366, with illustrations. New York: Albert and Charles Boni, 1926.

In this volume the representatives of the Metropolitan Life Insurance Company, who are chiefly concerned in the gospel of health education, offer for the general reader an A B C presentation of medical advice. Like most such works, it suffers somewhat by its inadequacy to cover every contingency that may arise. On the other hand, such advice as is given is sound, for the most part, and generally useful. Some may question the necessity for a discussion of beriberi and bubonic plague; one may smile over the suggestion under adrenalin "see asthma"; one may be surprised to find Edward F. Bowers cited in a reliable book as a medical authority. But most of the advice and its arrangement are thoroughly compatible with the best medical thought. A valuable appendix is the list of national health organizations that will send literature on the topics with which they are concerned. A more detailed index than the alphabetical list of subject headings would aid greatly in finding some points covered by the book which are not available except by complete reading.

THE THYROID GLAND. By Charles H. Mayo, M.D., Professor of Surgery, University of Minnesota, and Henry W. Plummer, M.D., Professor of Medicine, University of Minnesota. The Beaumont Foundation Lectures. Series number four. Cloth. Price, $2.50. Pp. 83. St. Louis: C. V. Mosby Company, 1926.

This is a report of two interesting lectures delivered before the Wayne County Medical Society, Detroit, in 1924 and 1925. The first lecture, by Dr. Charles H. Mayo, covers the history, anatomy, physiology and certain etiologic factors concerning goiter. Since the author has gathered together historical facts, some of them apparently from sources not generally accessible, this lecture is read with considerable interest. Certain statistical information concerning goiter, compiled from draft board records, is of interest in that it emphasizes the uneven distribution of both simple and exophthalmic goiter in the United States. Finally, a brief statement concerning the parathyroids is appended. This gives no account of recent advances, notably those of Collip, made in this field of study. The contribution of Dr. Plummer constitutes a fairly concise statement of his theories as to the genesis of thyroid dysfunction, the relation of the thyroid to emotional states, the classification of goiter, and the modus operandi of iodine in the control of hyperthyroidism in exophthalmic goiter. This lecture seems to offer a more complete and clear statement of his hypotheses than has previously appeared and as such is a valuable publication. These theories, based on a keen analysis of clinical data of an exceptionally large number of cases, are logical and intensely interesting even though the future may show that they are not entirely true.

NERVOUS AND MENTAL DISORDERS FROM BIRTH THROUGH ADOLESCENCE. By B. Sachs, M.D., Consulting Neurologist to the Mount Sinai and Montefiore Hospitals, and Louis Hausman, M.D., Instructor in Neuro-Anatomy, Cornell University Medical College. Cloth. Price, $10 net. Pp. 861, with 110 illustrations. New York: Paul B. Hoeber, Inc., *1926*.

As stated in the preface, this is a new book—not merely a revision of Sachs' treatise on the Nervous Diseases of Children, the last edition of which appeared in 1905. That the book has been rewritten becomes apparent when opening a chapter at random. There are additions, omissions, a different phraseology, and a new and richer bibliography. The reader will find in sixty-two pages an excellent summary of the structure of the nervous system in its relation to function, written by Hausman. In many instances, conciseness in neuro-anatomy means that more is lost in clarity of presentation that is gained by brevity of description. In this instance the author has rendered a real service to those thirsty for a knowledge of the latest advances in neuro-anatomy, especially of the brain stem, and its newly discovered functions as revealed by the pathologic findings in the corpus striatum. The reward for a careful perusal of the anatomic chapter is an intelligent conception of the practical chapters on diseases of the midbrain, including those of the striate bodies. The account of organic nervous diseases in childhood and adolescence is complete and of the classic variety. The advice "to give luminal in epilepsy for a number of months," seems to specify a period somewhat too short. Phenobarbital may ordinarily be given for a number of years. It has often happened that when phenobarbital has been discontinued after a number of months, epileptic seizures have become more numerous and more intense than before its administration. Another statement in need of modification is the following: "Successful treatment or *cure* of the epileptic condition cannot be claimed unless the spells have not recurred for a period of at least one or, still better, two years." This is entirely at variance with the opinion of neurologists who have had a large experience in the treatment of epilepsy. They believe that a cure of epilepsy cannot be claimed even if there have been no seizures for a number of years; also that treatment should be continued over a period of many years before the reduction method is undertaken. The authors are not overenthusiastic on the subject of the disorders of the internal secretions, and thus have failed to enter the field of speculative philosophy. Their conservatism is all the more commendable, as many have allowed their emotions (supposedly caused by endocrine products) to overpower their purely intellectual functions, and in consequence view everything from an endocrine angle.

Chapter XXXI, the work of Sachs, for which he assumes entire responsibility, is a strong polemic against freudianism. The author is so enraged over the abuses of the new sex psychology that he has allowed, in spots, invective and sarcasm to take the place of cool logic. Unwittingly he has thus exposed himself to possible ridicule on the part of freudians, who stigmatize their bitter antagonists as individuals who violently resent Freud's teachings because they strike at the author's (the attacker's) resistance to have his suppressed complexes unearthed. In spite of Sachs' strong language, the article dealing with Freud's psychanalysis is excellent and represents the mature judgment of conservative neurologists of the world. It is regrettable that a few of the young medical men in this country and abroad have become intoxicated by the poison of freudian psychanalysis. In this respect medical youth does not differ essentially from the young of all times and vocations, who are fascinated by sex, regardless of the nudity with which it presents itself. This book will probably have a tendency to set the disciples of Freud to thinking, though all hope seems to be lost for those of the profession who pose as leaders of the movement, no matter how old they have become.

ZUR KENNTNIS DER PSYCHISCHEN RESIDUÄRZUSTÄNDE NACH ENCEPHALITIS EPIDEMICA BEI KINDERN UND JUGENDLICHEN, INSBESONDERE DER WEITEREN ENTWICKLUNG DIESER FÄLLE. Von Privatdozent Dr. med. et phil. Rudolf Thiele, Assistent der Psychiatrischen u. Nervenklinik der Charité. Paper. Pp. 100. Berlin: S. Karger, 1926.

This is number 36 of a monograph series edited by Bonhoeffer and appearing under the auspices of the *Monatsschrift für Psychiatrie und Neurologie*. The author is a pupil of Bonhoeffer, at whose clinic in the Berlin Charité the clinical material was obtained. Twelve selected cases of psychic residuals in epidemic encephalitis are related in detail. Stress is laid on restlessness and overproduction of impulses as the fundamental features and on the lack of the pleasurable emotion usually attending motor activity in children. These children are the helpless tools of impressions from without, while voluntary direction, selection and inhibition are reduced so that there is a tendency to reiteration and perseveration in a superficial way, with decreased emotional life. The fundamental intellectual processes are intact, and the apparent desultoriness of thought is due to lack of attention and interest. On the whole, the author is quite optimistic, as twelve of the eighteen patients studied have shown definite improvement. He does not consider seriously the fear expressed in some quarters that encephalitis will add materially to the number of delinquent and criminal youths.

The Diagnosis, Treatment and End Results of Tuberculous Disease of the Hip Joint. By George Perkins, M.Ch., F.R.C.S., Assistant Surgeon to the Royal National Orthopaedic Hospital. Cloth. Price, $1.75. Pp. 118, with 32 illustrations. New York: Oxford University Press, 1926.

This monograph was awarded the Sir Robert Jones Prize given by the British Orthopedic Association, and rightly deserves that recognition. The author emphasizes the importance of the recognition of the presence of tuberculous disease at the earliest possible moment. He states that, at present, treatment of bone and joint tuberculosis in England is local, consisting of recumbency, traction and fixation, combined with general treatment of open air, hygiene and heliotherapy. He reviews more than fifty cases treated along these lines. The book is excellently illustrated by means of many roentgenograms and photographs of various forms of apparatus, such as the Carshalton carriage, devised by Dr. Pugh, and the Pyrford frame. Perkins takes issue with Phemister's explanation of the difference in the kind and degree of cartilage destruction in a pyogenic and in a tuberculous arthritis, and offers his own explanation of this phenomenon.

Thomas Sydenham, Clinician. By David Riesman, M.D., Professor of Clinical Medicine, University of Pennsylvania. Cloth. Price $1.50. Pp. 52, with 1 illustration. New York: Paul B. Hoeber, Inc., 1926.

In 1924 the world celebrated the passing of three hundred years since the birth of Thomas Sydenham, most noted of medical clinicians. It is fortunate that there becomes available an appreciation of this great man and some notes concerning his life in a form attractive equally to medical or lay readers. The distinguishing characteristic of Sydenham was his objectivity. He described the course, prognosis and treatment of disease in word pictures as accurate as paintings, disregarding largely the observations of the past. His description of gout is considered a medical classic. He adopted the extremely modern view that fever may be a wholesome process, representing an attempt of the human organism to rid itself of disease. The book is presented in the usual handsome format and style that characterize contributions from the Hoeber press.

La radiologie du médecin praticien: Radiodiagnostic des maladies de l'appareil digestif. Par R. Ledoux-Lebard. Paper. Price, 30 francs. Pp. 288, with illustrations. Paris: Masson et Cie, 1925.

This is an excellent handbook of gastro-intestinal radiodiagnosis written by one of the leading French workers in radiology. The author is well known to American radiologists, not only through his visit to this country to give the Caldwell lecture before the American Roentgen Ray Sociey in 1921, but also on account of the great personal aid rendered to the roentgen-ray division of the Chief Surgeon's Office of the American Expeditionary Forces during the American participation in the Great War. The text contains a surprising wealth of valuable facts and observations in view of the relatively small size of the work. There are several useful tables for the differential diagnosis of various lesions, and radiologic signs which should prove extremely useful to all interpretors of radiologic findings. Particularly interesting is a time-table of the digestive transit; according to the author, the barium meal should require not more than twenty-four hours for completion of the passage through the alimentary tube. The illustrations are, for the most part, diagrams, which serve the purpose of teaching in many instances even better than the original roentgenograms, but there are a sufficient number of roentgenograms, many of them retouched.

Bainbridge and Menzies Essentials of Physiology. By C. Lovatt Evans, D.Sc., M.R.C.S., L.R.C.P., Professor of Physiology, University of London at St. Bartholomew's Medical College. Fifth edition. Cloth. Price, $5. Pp. 508, with 197 illustrations. New York: Longmans, Green & Co., 1925.

This edition, edited and revised by Professor Evans, does not differ in any essential from the fourth edition, which appeared in 1920. If there are any changes (aside from the description of the action of insulin) they are hard to detect. Some illustrations have been omitted; others, added. The size of the volume remains the same. The book is too advanced for use in courses of college physiology; besides, it lacks anatomic and biochemical data essential for an elementary textbook. It is too abbreviated for use by medical students. Whether it answers the purpose for which it was written—to meet "the requirements of the medical student preparing for a pass examination in the subject of physiology"—is hard to tell. It seems to us that a student can accomplish more if, in his attempt to review his physiology on short notice, he glances through the textbook he originally used, rather than grope through one with which he is totally unfamiliar. If, however, the book is to be used in connection with some other standard textbook of physiology, it may help the student in understanding certain obscure points, as it is lucidly written and treats every subject adequately, though briefly.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

Auricular Fibrillation. By J. G. Emanuel, B.Sc., M.D., F.R.C.P., Physician to the Queen's Hospital, Birmingham. The Ingleby Lectures delivered at the University of Birmingham May 6th and May 13th, 1925. Cloth. Price, 3/6 net. Pp. 31, with 16 illustrations. Birmingham. Cornish Brothers, Ltd., 1926.

Lectures presenting conservative statement of established views on causes and treatment with digitalis.

Lehrbuch der Gonorrhöe: Nebst einem Anhang—"Die Sterilität des Mannes." Herausgegeben von A. Buschke und E. Langer. Paper. Price, 46.50 marks. Pp. 570, with 112 illustrations. Berlin: Julius Springer, 1926.

Systematic presentation of complete knowledge of most common venereal complaint.

Methods and Problems of Medical Education. (Fourth Series) Paper. Pp. 32, with illustrations. New York: The Rockefeller Foundation, 1926.

Record system of Presbyterian Hospital in New York fully elucidated.

Notes on Quarantine Practice for Quarantine Officers. By J. S. C. Elkington, M.D., D.P.H., Director, Division of Tropical Hygiene. Commonwealth of Australia, Department of Health. Service Publication No. 31. Paper. Pp. 151. Melbourne, 1926.

Guide to control by quarantine of infectious diseases.

Fortschritte und Probleme in der Therapie innerer Krankheiten. Von Privatdozent Paul Saxl, Assistent der I. medizinischen Universitätsklinik in Wien. Paper. Price, 6.60 marks. Pp. 132. Vienna: Julius Springer, 1926.

Twelve lectures on therapy in internal medicine.

Le rhume des foins. Étude clinique expérimentale et thérapeutique. Par Paul Giroud. Paper. Pp. 108. Paris: Vigot Frères, 1926.

General review with case reports of recent information on hay-fever.

La grippe. Clinique. Prophylaxie. Traitement. Par le Dr. Pierre Lereboullet, professeur agrégé à la Faculté de médecine de Paris. Paper. Pp. 144, with illustrations. Paris: J. B. Baillière & Fils, 1926.

Collection of French observations on epidemic influenza.

Die Biochemie des Karzinoms. Von Dr. Gisa Kaminer, Adjunkt der Karzinomstation der Rudolfstiftung in Wien. Paper. Price, 3.50 marks. Pp. 52. Vienna: Julius Springer, 1926.

Chemistry in the study of malignant tumors.

Monografia del Departamento de Guatemala. Escrita por el Licenciado J. Antonio Villacorta C., Jefe Político del mismo departamento y miembro de la Sociedad de Geografía e Historia. Impresa por Disposición del General Don José María Orellana, Presidente de la República. Paper. Pp. 378, with illustrations. Guatemala, 1926.

Mesenteric Vascular Occlusion. Supplemented by an Appendix of 76 Original Cases. By A. J. Cokkinis, M.B., B.S., F.R.C.S., Surgical Registrar, London Lock Hospital. Cloth. Price, $4. Pp. 159, with illustrations. New York: William Wood & Company, 1926.

Working for Health. A Report of 1925 Activities by the Maine Public Health Association and Local Health Societies. By Maine Public Health Association. Paper. Pp. 67. Augusta, 1926.

Libelli a Collegio Manjurico Medicinae Mukdensi. Volumen V, 1922-1924. Paper. Mukden: Manchuria Medical College, 1926.

Medicolegal

Death a Fixed Fact Which Cannot Be Apportioned

(Biederzycki v. Farrel Foundry & Machine Co. et al. (Conn.), 131 Atl. R. 739)

The Supreme Court of Errors of Connecticut, in advising the entry of a judgment dismissing an appeal from an award of the compensation commissioner, says that the claimant's husband had sustained an injury arising out of and in the course of his employment for which the defendant company was adjudged, in June, 1923, to pay him compensation. The injury so suffered was from a diseased condition of his heart, due in part to preexisting disease, and in part to aggravation of preexisting disease. He died in August, 1924, and the injury mentioned was causally connected with, and a contributing factor to, his death. One ground of appeal from the award of the commissioner in favor of the widow on account of the death of her husband was the alleged error of the commissioner in refusing to apportion her claim in accordance with the provision of section 5341 of the general statutes of the state, as amended in 1919 and 1921 to read:

> In any case of aggravation of a disease existing prior to such injury, compensation shall be allowed only for such proportion of the disability due to the aggravation of such prior disease as may reasonably be attributed to the injury.

The defendants argued that, as the compensation for this employee's incapacity resulting from the injury was by this statute apportioned, it was inequitable not to apportion in the same manner the compensation as to the beneficiary on account of the death of the employee in the same manner. And, further, that this and other sections of the workmen's compensation act make it reasonably clear that, when this amendment to section 5341 provides that in case of aggravation of a disease existing prior to the injury compensation shall be apportioned for such proportion of the disability as may be reasonably attributed to the injury, it used the word "disability" as applicable to the incapacity prior to the death as well as to the death resulting from the injury. But this court is unable to agree with that construction. When the amendment uses the term "disability," it manifestly uses it in the sense of incapacity, a use that prevails through the act. If the court is right in this, it would follow that the amendment refers to the living, and not to the case of death. Death is a fixed fact which cannot be apportioned in the manner provided in the amendment to this section.

Validity of Transactions with Insane Persons

(Wells et al. v. Wells et al. (Ind.), 150 N. E. R. 361)

The Supreme Court of Indiana, in reversing a judgment rendered in favor of the defendants in this action, brought after the death of a grantor, asking for the cancellation of deeds which it was alleged that he had been fraudulently induced to execute, says that it was further alleged that the grantor was a person of unsound mind at the time the deeds were made, and the jury found that he was. It is elementary that a contract is the product of a meeting of the minds, and that mutual assent is necessary to the making of a valid contract. It follows that, where one of the parties is insane, there can be no mutual assent, and therefore no contract. That is the plain and simple logic of the matter. But, when we come to consider what is fairly and justly due those who have transacted business with insane persons, and the corresponding rights and remedies of the insane arising out of the same transactions, we find that the matter is not simple but complex. The presumption is that every person is sane. The line of demarcation between sanity and insanity is in many instances obscure and elusive. It is obvious, therefore, that an innocent person who deals fairly with one who is insane is entitled to protection and should not be made to suffer financial loss merely because the one with whom he dealt was insane. The rule seems to be universal that, where one of the parties to a contract was insane, but had not been so adjudged at the time of making it, the contract will not be enforced so long as it remains purely executory (entirely to be performed), even though the other party entered into it in good faith, without knowledge of the insanity. Also by the great weight of authority the further rule is established that, where a contract has been entered into with an insane person in good faith, without fraud or imposition, for a fair consideration, without notice of the insanity, before an adjudication of insanity, and has been executed (performed) in whole or in part, the contract will not be set aside unless the parties can be restored to their original position. The foregoing rules are, of course, applicable to deeds.

On the death of this grantor, his children acquired the rights which would have been his had he been restored to sanity, and they were required to do nothing more than would have been required of him. Had he been restored to sanity, he could, if satisfied with the transaction, have adopted it and made it his own by mere acquiescence or by accepting the consideration or benefits, if any. But, if he had been dissatisfied, the most that he could have done would have been to offer to rescind. From a consideration of many cases, it appears that the somewhat mysterious thing called a "disaffirmance" is nothing more or less than a notice or a demand. In a quite recent case it is held that the purpose of the demand is to give the grantee an opportunity to "restore what he has received, without suit and costs if he chooses." But why deal so gently with one who has acquired property by fraud? Why manifest such tender regard for one who has procured a conveyance from an insane person, knowing the grantor's mental infirmity? The law does not require it. With practical unanimity the courts are now holding that in such cases relief will not be denied merely because the idle ceremony of a demand has not been performed.

Insanity with Reference to Suicide and Murder

(London Guarantee & Accident Co. v. Officer (Colo.), 242 Pac. R. 989)

The Supreme Court of Colorado, in affirming a judgment in favor of plaintiff Officer, as executor, on an insurance policy, says that the policy provided that in case of loss of life from bodily injuries effected through accidental means, directly and independently of all other causes, the company would pay the principal sum; but if the injuries were inflicted by the insured, sane or insane, the measure of the company's liability should be a sum equal to the last premium paid. The insured, while insane, committed suicide. When this case was before this court once before, this court held that accident policies providing for payment in case of death are, in that event and to that extent, life insurance policies, and that, under the Colorado statute, after the first policy year, suicide while insane is no defense. This court having decided that death from injury, self-inflicted while insane, was death by accident under the terms of this policy, the trial court, in its instruction, defined the word "insane" as meaning "that unsoundness of mind which would prevent the insured from understanding the physical nature and consequences of his act, or, if foreseeing and meditating its physical consequences, would prevent the insured from understanding its moral nature and aspect."

The defendant company objected to that instruction, and asked in lieu of it one that if the insured intended to kill himself, and knew that his act would probably produce death, then he was not insane, and the injury was not an accident; in other words, it was contended that the insanity that would make suicide an accident and bring it within the terms of the Colorado statute as a forbidden defense to a suit on a life policy was something entirely different from the insanity that constitutes a defense in a homicide case. The objection to the court's instruction was overruled and the defendant's requested instruction rejected. This court thinks that ruling was correct. In most murders committed by insane persons the perpetrator knows he is committing the act, knows that death will probably result, and expects and intends that it shall; nevertheless, he may not be held accountable if afflicted with a mental derangement which precludes any conception of the moral and legal aspects of the killing and permits him to undertake it with the same indifference that he would undertake the killing of an insect. He is insane if so mentally diseased that he has no capacity to understand the nature of the act and no ability to distinguish between right and wrong as applied thereto; otherwise he is sane. Such is the insanity which, in most jurisdictions, including this, relieves from responsibility one who takes human life. As it is the absence of responsibility that makes self-destruction an accident, this is the rule that should be applied here. Some courts apparently make the distinction contended for by the defendant, but this court thinks that it is unsupported by sound reason and declines to adopt it. The trial court's definition was correct and sufficiently specific.

Classification of Loss of Arm Two Inches Above Elbow

(Employers' Mut. Ins. Co. et al. v. Industrial Commission et al. (Colo.), 242 Pac. R. 988)

The Supreme Court of Colorado says that, by accident in the course of his employment, an employee lost an arm two inches above the elbow. The Colorado statute governing the case specifies compensation for "loss of one arm between elbow and shoulder, 208 weeks; loss of forearm between wrist and elbow, 139 weeks. . . . (*c*) Whenever amputation is made between any two joints mentioned in this schedule . . . the resulting loss shall be estimated as if the amputation had been made at the joint nearest thereto."

It is plain that this would mean that this employee ought to have the compensation specified for loss at the elbow, but there is no specification for compensation for loss at the elbow. The insurer said that the compensation should be for 139 weeks, but that is to say that "at the elbow" means "below the elbow," to support which there is no ground. Nor is there ground to say that "at the elbow" means "above the elbow." The reasonable conclusion is that paragraph (*c*) has no reference to the specifications for the loss of the arm, which leaves 208 weeks for loss between shoulder and elbow as the correct award. What compensation should be awarded for a loss actually at the elbow is a question which is not at this time before the court.

Proof as to Malpractice and Roentgen-Ray Apparatus

(Wright v. Conway (Wyo.), 242 Pac. R. 1107)

The Supreme Court of Wyoming says that in this case pertaining to the treatment of a fracture and a failure to use roentgen rays, which had a previous consideration by this court (241 Pac. R. 369), a petition for a rehearing was filed. The case was the first one of the kind coming before this court; it was given the most careful consideration; and the petition is denied. This court did not overlook the testimony of the plaintiff's wife and that of a physician with reference to the plaintiff's slipping down in the bed occasionally while at the hospital, and the temporary lifting of the weight for the purpose of readjusting him in proper position. That he had no braces to hold him in bed would seem to indicate some thought of lack of attention, though the court doubts that that was intended. Guesswork cannot be substituted for evidence or inference. However, an inference cannot be based on a mere possibility; it can be based only on a fact proved, or something known to be true. The plaintiff's wife was not an expert witness, and her testimony could not be deemed sufficient to justify an inference on which a verdict might properly be based, that the fragments of the bones were not at those times in apposition. But even if it might be held to have justified such an inference, on what ground could it have been submitted to the jury, there being no proof of negligence on the surgeon's part? The temporary lifting of the weight, and the readjustment of the patient in the bed, were shown not to have been negligence. And since no other negligence was established by any proof sufficient to take the case to the jury, there would be no reason for submitting the case on the basis that this particular evidence would have shown the bones not to have been in apposition.

Objection was taken to this court's stated conclusion that it was the duty of the plaintiff to show the availability of a roentgen-ray apparatus or machine in order to succeed in his charge that the defendant was negligent in failing to use it for the purpose of discovering whether or not the fragments of the bone were in apposition, or otherwise, as an aid to diagnosis and treatment. But to have thrown the burden on the defendant of showing that he could not secure a roentgenogram at the time when it was charged to have been negligence not to use it would have placed on him the burden of proving that he was not negligent. That is not the rule in cases of alleged malpractice. Nor does this court think that it would be justified in holding, without evidence, that in communities like Cheyenne such instruments were so commonly owned and employed by physicians as to justify an inference of availability on that ground alone, especially in view of the testimony that the defendant said, when first interrogated about a roentgenogram, that he could not get a machine and could not take the patient to one. Nor should the case be disposed of on any such ground as that, since a roentgen-ray apparatus was found to be available and used four weeks after the diagnosis and commencement of the treatment, it would be a fair inference that the same instrument was available at all times before that, including the time of the diagnosis and beginning of the treatment. Furthermore, in addition to the absence of proof of negligence in the failure to use the roentgen ray, and in other respects, there was also insufficiency of proof of any causal connection between any such failure as may have been claimed to exist and the subsequent condition for which damages were claimed in this action.

Society Proceedings

COMING MEETINGS

American Acad[illegible] and Otolaryngology, Colorado Springs, Sept. [illegible] Peter, N. E. Cor. Chestnut and 20th Streets, [illegible]
American Association for Thoracic Surgery, Montreal, Canada, Sept. 30. Dr. Ethan Flagg Butler, Robert Packer Hospital, Sayre, Pa., Secretary.
American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Chicago, Sept. 20-22. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.
American Climatological and Clinical Association, Philadelphia, Sept. 27-28. Dr. A. K. Stone, Auburn Street, Framingham Center, Massachusetts, Secretary.
American College of Physical Therapy, Chicago, Oct. 18-23. Dr. R. W. Fouts, City National Bank Building, Omaha, Secretary.
American Electrotherapeutic Association, Atlantic City, Sept. 8-11. Dr. Richard Kovacs, 223 E. 68th Street, New York City, Secretary.
American College of Surgeons, Montreal, Canada, Oct. 25-29. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
American Public Health Association, Buffalo, Oct. 11-14. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.
Association of American Medical Colleges, Cleveland, Ohio, Oct. 25-27. Dr. F. C. Zapffe, 25 East Washington Street, Chicago, Secretary.
Association of Military Surgeons of the United States, Philadelphia, Oct. 14-16. Col. J. R. Kean, U. S. A., Ret., Army Medical Museum, Washington, D. C., Secretary.
Central States Pediatric Society, St. Louis, Oct. 22-23. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.
Central Tri-State Medical Society, Huntington, W. Va., Sept. 9. Dr. F. O. Marple, 418 Eleventh Street, Huntington, Secretary.
Colorado State Medical Society, Colorado Springs, Sept. 21-23. Dr. F. B. Stephenson, 460 Metropolitan Building, Denver, Secretary.
Delaware State Medical Society, Dover, Oct. 12-13. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.
Indiana State Medical Association, West Baden, Sept. 22-24. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.
Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 18-22. Dr. W. B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.
Kentucky State Medical Association, Frankfort, Sept. 20-23. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
Michigan State Medical Society, Lansing, Sept. 14-17. Dr. F. C. Warnshuis, Grand Rapids National Bank Bldg., Grand Rapids, Sec'y.
Missouri Valley, Medical Society of the, Council Bluffs-Omaha, Sept. 15-17. Dr. Charles Wood Fassett, 115 East 31st St., Kansas City, Mo., Sec'y.
National Tuberculosis Association, Washington, D. C., Oct. 4-7. Dr. George M. Kober, 1819 Eye Street, N. W., Washington, D. C., Sec'y.
Nevada State Medical Association, Reno, Sept. 24-25. Dr. H. J. Brown, Gray-Reid Building, Reno, Secretary.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 11-14. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.
Southwest, Medical Association of the, Kansas City, Mo., Oct. 5-9. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.
Vermont State Medical Society, Burlington, Oct. 14-15. Dr. W. G. Ricker, 29 Main Street, St. Johnsbury, Secretary.
Virginia, Medical Society of, Norfolk, Oct. 12-15. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.
Western Surgical Association, Duluth, Minn., Oct. 14-16. Dr. H. P. Ritchie, Lowry Building, St. Paul, Secretary.
Wisconsin, State Medical Society of, Madison, Sept. 15-17. Mr. J. G. Crownhart, 153 Oneida Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to The Journal in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

6: 1-148 (July Supplement) 1926

Mosquito Control at Barranquilla, Colombia, as Prophylaxis Against Yellow Fever. L. H. Dunn.—p. 1.
Estimation of Number of Hookworms Harbored by Dilution Egg-Count Method. R. B. Hill, New York.—p. 19.
*Hookworm Disease in Mexico. H. P. Carr, New York.—p. 42.
Comparison of Stoll and Lane Egg Count Methods for Estimation of Hookworm Infestation. F. L. Soper, New York.—p. 62.
*Hookworm Reinfestation for Three Years After Treatment in Sanitated Area in Porto Rico. R. B. Hill, New York.—p. 103.
Evaluation of Stoll and Lane Methods in Light Hookworm Infections: Accuracy in Diagnosis of Willis Flotation Method. W. C. Hausheer, C. A. Herrick and A. S. Pearse, New York.—p. 118.
Place of Smear in Hookworm Diagnosis. W. C. Hausheer and C. A. Herrick, New York.—p. 136.

Hookworm Disease in Mexico.—Evidence is presented by Carr which indicates that the predominant species of hookworm in Mexico is *Necator americanus*.

Hookworm Reinfestation in Sanitated Area.—A quantitative study was made by Hill on a group of approximately 300 people in a sanitated area in Porto Rico, before and just after treatment, one year after treatment, and three years after treatment. Treatment reduced the incidence from 90 per cent to 19 per cent of the people. The rate rose rapidly the first year and less rapidly thereafter to 58 per cent after three years. The intensity of infestation was reduced 98 per cent by treatment, and this rose to 20 per cent of the original infestation in three years. Farmers showed the greatest absolute increase and children under 10 years of age the greatest relative increase. In neither group was the infestation heavy after a three year period. It is concluded that sanitation and intensive treatments have given results of permanent value in the control of hookworm disease in Porto Rico.

American Journal of Medical Sciences, Philadelphia

171: 781-936 (June) 1926

Psychoneuroses. P. Janet, Paris.—p. 781.
Effects of Allyl-Phenylcinchonin Ester on Metabolism. M. Kahn and D. J. Cohn, New York.—p. 786.
*Importance of Urologic Diagnosis in Internal Medicine. H. G. Beck and A. E. Goldstein, Baltimore.—p. 796.
*Human Constitution. IV. Heredity and Environment. G. Draper, New York.—p. 803.
*Bacterial Flora of Cancer of Breast. S. L. Warren, Boston.—p. 813.
*Repeated Inoculations of Animals with So-Called "Cancer Organisms." S. L. Warren and H. E. Pearse, Boston.—p. 820.
*Cancer and Spinal Cord. A. Weil and W. M. Kraus, New York.—p. 825.
*Relation of Abdominal and Rectal Infections to Pathogenesis of Diabetes Mellitus. J. W. Visher, Waukesha, Wis.—p. 836.
*Respiratory Quotient Curves in Diagnosis of Diabetes. O. H. Petty and W. H. Stoner, Philadelphia.—p. 842.
*Early Diagnosis of Pregnancy by Methods of Precision: Sugar Tolerance Tests. J. C. Hirst and C. F. Long, Philadelphia.—p. 846.
Passive Anaphylaxis in Hemophiliac. C. A. Mills and L. Schiff, Cincinnati.—p 854.
Reacting Power of Asthenic Persons: Antibody Production. E. Baráth, Budapest.—p. 855.
Value of Routine Examination of Cerebrospinal Fluid. B. L. Crawford and A. Cantarow, Philadelphia.—p. 859.
*Circulatory Apparatus in Pneumonia. F. T. Billings, Pittsburgh.—p. 872.
*Graphic Presentation of Blood Sedimentation Test. Pulmonary Tuberculosis. J. Cutler, Philadelphia.—p. 882.

Importance of Urologic Diagnosis.—Beck and Goldstein assert that patients suffering with urogenital diseases who apply for treatment at a medical clinic are frequently not diagnosed as such. They advise that a systematic routine should be adopted by physicians for the investigation of chronic diseases which should include a microscopic examination of the urine. Reflex disturbance from the kidneys, ureters, bladder and stomach frequently leads to error in diagnosis. Gross anatomic lesions of the kidneys and ureters may exist without giving rise to any functional disturbance of the bladder or any pathologic findings in the urine. A certain group of chronic medical cases in which all treatment had failed resulted in either absolute cure or definite improvement in 65 per cent after treatment was established on a urologic diagnosis.

Effect of Heredity and Environment.—Three examples of parakinetic effect on the psychic panel of personality are given by Draper. Idiokinetic modifications are exemplified in cited cases of familial diabetes, mesodermal fault, rheumatic arthritis and rheumatic fever. Heredity and environment model and remodel the individual. Hereditary forces are distorted by environmental pressure. The first of these influences is known as idiokinetic, the second as parakinetic.

Bacterial Flora of Breast Cancer.—Micrococci and diphtheroids have been cultured readily by Warren from cancer tissue obtained from seven human breasts, without obvious areas of infection. They also were present in a breast with chronic mastitis and in parts of a breast not involved by cancer. It would appear that these organisms are casual inhabitants of the breast structures, and play no direct part in the production of cancer of the breast. Warren says that the literature bears witness to the fact that Nuzum's micrococcus, which seems the same as the one he described, has been obtained at different times in the past though given various names.

Inoculation of Animals with Cancer Organisms.—Warren and Pearse gave 241 mice, of a strain susceptible to mouse cancer inoculations but in which spontaneous tumors were very rare, at weekly intervals intracutaneous injections of either the micrococcus of Nuzum or diphtheroids and micrococci obtained from human breast cancers. The inoculations were continued until death, or for four months, at which time only fifty mice remained alive, the others having died, usually from septicemia. These fifty mice were observed for two months more, or for a total of six months. Ulcerations of the skin, which readily healed, occurred with great regularity. None of the animals showed any evidence of a neoplastic growth, except one which developed a spontaneous tumor of the liver. Four rabbits receiving weekly injections of both diphtheroids and micrococci for from three to five months showed no signs of malignant disease even at the end of six months. Warren and Pearse have found no evidence that any of these organisms play a primary rôle in the etiology of cancer, though an indirect rôle is possible.

Cancer and Spinal Cord.—Out of sixteen cases of carcinomatosis analyzed by Weil and Kraus, nine showed a normal spinal cord in the histologic examination, despite severe cachexia and long duration of the disease. In cases with degenerative changes in the spinal cord, the degenerations were either secondary to dural metastases lying outside the spinal cord (four) or were caused by syphilis or general arteriosclerosis (three). It could not be proved that there is a specific cancer toxin circulating in the blood or lymph channels which acts destructively on the myelin sheaths of the nerve fibers of the spinal cord. On the contrary, the examinations have shown that the spinal cord is more resistant to the influence of carcinomatosis than the other organs of the body. The metastases and the resultant cord changes are at the same segmental level as the initial cancerous growth. This has been shown by the absence of cord lesions at lower levels and by tracing upward the lesion found at the level corresponding to that of the original growth. This type of ascending degeneration in the posterior column is a frequent complication of cancer metastases to the dura, and is due to posterior root involvement.

Relation of Abdominal and Rectal Infections to Diabetes.—Five cases of diabetes mellitus apparently secondary to abdominal and rectal infections are reported by Visher, with improvement following surgical intervention. The opinion is ventured that in these cases the infection reached the pancreas through the lymphatics, either directly or by way of the portal circulation. The conclusion is suggested that abdominal and rectal infections are important etiologic factors in the etiology of diabetes mellitus.

Respiratory Quotient Curves in Diagnosis of Diabetes.—It is asserted by Petty and Stoner that respiratory quotient studies, before and every half hour for three hours after the administration by mouth of 1.75 Gm. of dextrose per kilogram of body weight, are a direct index of the normality or abnormality of the sugar-burning mechanism. By such respiratory quotient curves, absolute differentiation may be made between diabetes mellitus and renal glycosuria, and diabetes mellitus may be diagnosed earlier than by the usual glucose tolerance test. A number of cases in which blood sugar rose above 180 mg. per hundred cubic centimeters of blood and returned to normal in less than three hours were shown, by respiratory quotient curves, to be definitely diabetic.

Early Diagnosis of Pregnancy.—The methods of precision for the early diagnosis of pregnancy are reviewed by Hirst and Long, and the alimentary glycosuria test is shown to be the one in which most trust can be put. An extremely simple technic for the performance of this test is offered with the use of table sugar, a lemon, and Fehling's solution as apparatus. A new series of 150 cases is reported with 6 per cent error in the early diagnosis of pregnancy, and 8 per cent error in nonpregnant women.

Circulatory Apparatus in Pneumonia.—The cardiovascular apparatus in seventy-eight cases of lobar pneumonia and bronchopneumonia was studied by Billings. Arrhythmia occurred in six patients; two died. The irregularity, in all but one, was premature beats. Weak or feeble heart sounds was mentioned in thirty-two; nineteen of this group died. Only three cardiac murmurs were discovered. Of the seven patients who developed pulmonary edema, all died. A clinical diagnosis of myocarditis was made in twenty-nine cases; sixteen patients died. Myocardial insufficiency was diagnosed in twenty-one patients from graphic tracings, most of them being confirmed clinically. No cardiovascular disturbance could be discovered in twenty-three. All recovered, except five. Three cases came to necropsy. One showed cardiac muscle degeneration. Reduplication of sound was recognized once, and gallop rhythm once. Cardiac enlargement was discovered in twelve cases and in six was possibly due to right dilatation. Apparently death in pneumonia is, in the large majority of cases, due to cardiac failure.

Blood Sedimentation Test in Pulmonary Tuberculosis.—As an aid in estimating activity, Cutler regards the sedimentation test as more reliable than temperature curve, pulse rate or gain in weight, the three major guides in the treatment of tuberculosis. By repeating the test at regular intervals, the true course of the disease can be represented graphically for, as the patient improves, the graph should approach more and more the horizontal line, but should he become worse, more and more the vertical curve. Enough clinical evidence has been published to warrant the adoption of this test as a routine procedure in institutions responsible for the care of tuberculous patients.

American Journal of Obstetrics and Gynecology, St. Louis

11: 735-896 (June) 1926

Incidence and Treatment of Labor Complicated by Contracted Pelvis. J. W. Williams and K. C. Sun, Baltimore.—p. 735.
*Improved Prophylactic Method of Treating Eclampsia. B. Stroganoff, Leningrad, Russia.—p. 756.
*Glucose and Insulin in Toxemias of Pregnancy. C. J. Miller, New Orleans.—p. 763.
Phocomelus with Congenital Cystic Elephantiasis. H. A. Harris, St. Louis.—p. 767.
Janiceps Asymmetros: Case. G. T. Pack and I. C. Berrey, University, Ala.—p. 779.
*Sebaceous Glands in Human Nipple O C Perkins and A. M Miller, New York.—p. 789.
Outlet Pelvimetry. C. O. McCormick, Indianapolis —p. 794.
Radiotherapeutic Menopause. J. A. Corscaden, New York.—p 803.
*Placenta Praevia: Seventy-Nine Cases B L Lieberman, Detroit.—p. 814.
Protection of Perineum. A. Villarama, Manila —p. 823.
*Vomiting of Pregnancy: Treatment by Ovarian Extract. P. J Carter, New Orleans.—p. 828.
Cistern Puncture in Intracranial Birth Injuries. B. S. Dunham, Toledo, Ohio.—p. 833.
*Case of Fetal Dystocia. H. Thoms, New Haven, Conn.—p 839.
Ablatio Placentae: Eight Cases. W. E. Welz, Detroit.—p. 842.
*Purpura Hemorrhagica Complicating Pregnancy: Mother and Child Affected. P. Liebling, New York.—p. 847.
*Syphilis of Placenta in Negro J. R. McCord, Atlanta, Ga.—p 850
Pregnancy in Remaining Horn of Uterus Didelphys After Torsion and Partial Hysterectomy. C. E. Caswell, Wichita, Kan.—p. 853.

Prophylactic Method of Treating Eclampsia.—Stroganoff reviews again the good results accruing from the prophylactic treatment of eclampsia by his method. Of 300 patients, eight died, or 2.6 per cent. Of the latter, four arrived at the clinic moribund and died in from three to eight hours after admission. In 40.3 per cent of the 300 cases, there was not a single convulsion from the beginning of treatment; in 44.7 per cent there were from one to three seizures, and four or more in 15 per cent. The mortality among children is relatively favorable, amounting in the whole group to 16.6 per cent. But if prematurely born children (weighing less than 2,000 Gm) that died from exposure and operations, before treatment was begun, are excluded, the fetal mortality from eclampsia is 6 per cent. There was not a single maternal death due to treatment. Rapid recovery of the patients was general.

Glucose and Insulin in Toxemias of Pregnancy.—In forty cases of toxemia and twenty of eclampsia, Miller's treatment consisted of a modification of the Stroganoff method, combined with glucose, with excellent results. Lately, he has added insulin to the method, and the results have been even better.

Sebaceous Glands in Human Nipple.—The sebaceous glands of the nipple which are not associated with their follicles, Perkins and Miller state, may be assumed to represent a mechanism for lubricating the surface of the nipple, as suggested by Piersol and Jackson. During lactation, this lubricating material would probably tend to prevent the drying action of the infant's saliva and of the milk during evaporation, and thus would in the end prevent desiccation of the deeper layers of the corium with resultant cracking of the skin.

Placenta Praevia.—Among the seventy-nine cases reviewed by Lieberman, there were eleven maternal deaths and fifty-one fetal deaths. The greatest number of deaths (four maternal and fifteen fetal) followed version and breech extraction with cervical pack induction. Lieberman recommends bag induction as the preferable method.

Ovarian Extract in Vomiting of Pregnancy.—In the mild cases, Carter administers 5 grain (0.32 Gm.) tablets of ovarian extract (whole ovary) every three hours until the symptoms cease. In the moderately severe type the same treatment is used, but the ovarian extract is given in ampule form by hypodermic. One cubic centimeter is given daily until the nausea and vomiting have ceased, after which the treatment is continued for another week. In the severe type, the treatment consists of hypodermic injections of ovarian extract in conjunction with hypodermic injections of phenobarbital sodium (luminal sodium). The patient is kept in bed; nothing is given by mouth; glucose is administered per rectum, and hypodermoclysis is given according to the indications of the individual case. One cubic centimeter of ovarian extract is given every two hours, and 1 grain of (0.06 Gm.) phenobarbital sodium every three hours, both by hypodermic. This treatment is continued for forty-eight hours. If at the end of that time no improvement is observed, glucose and insulin are given according to the methods of Titus and Thalheimer.

Fetal Dystocia.—In Thoms' case a cyst, the size of a large grapefruit, lay against the child's back and was firmly attached by a thick stalk to the occipital region. Delivery was effected by version and extraction. The cystic mass was covered by skin, which was continuous with that of the fetus, and the upper third merged with the scalp. The lower half of the cyst was filled with thin, blood-tinged fluid. The upper half was made up of two lobes of brain tissue, covered with dura. The cavity of the cyst communicated freely with the cranial cavity.

Purpura Hemorrhagica Complicating Pregnancy.—This case is reported by Liebling as a symptomatic purpura in which a primipara began to show petechiae during the fifth month of pregnancy. The hemorrhagic eruption reached its maximum during the sixth month, then it gradually lessened, but did not disappear until about two months after labor. There was also bleeding from the nose and gums. The child was covered with petechiae at birth and showed a tendency to bleed soon afterward. An extremely low platelet count was found in both mother and child. The mother showed considerable anemia, but the child's red blood cell count and hemoglobin were above normal. Both patients recovered.

Syphilis of Placenta in Negroes.—Syphilis was demonstrated in 15.4 per cent of the 1,000 placentas examined by McCord. In 966 women, the Wassermann reaction was positive in 22.6 per cent. In 655 babies, the cord Wassermann reaction was positive in 0.7 per cent. The Wassermann reaction repeated on 396 women agreed in 88 per cent. Syphilitic placentas were found in 40.6 per cent of the positive Wassermann cases, and in 0.3 per cent of the negative Wassermann cases. In eighty-four premature babies born alive, the placentas were positive in 28.5 per cent. In eighty-four premature babies born dead, the placentas were positive in 67.8 per cent. Of 219 positive maternal Wassermann reactions, the cord Wassermann was positive in 14.5 per cent of the cases. Of 747 negative maternal reactions, the cord Wassermann was positive in 0.107 per cent. Of the positive placentas, 75 per cent had positive maternal Wassermann reactions.

Annals of Otology, Rhinology and Laryngology, St. Louis

35: *249 600 (June) 1926*

Hematologic Investigations on Throat Infections in Children with Adenoid Growths. V Schmidt, Copenhagen.—p. 249.
Otogenic Paralysis of Abducens. Isolated Palsy Associated with Irritation of Gasserian Ganglion. W H Sears, Huntingdon, Pa.—p. 348.
Radical Cure of Peritonsillar Abscess. H L Baum, Denver.—p. 429.
Marble in Esophagus. Case. E L Myers and U S Short, St Louis.—p. 438.
Skin Periosteal Flap for Radical Mastoid Operation. D C Smyth, Boston.—p. 442.
History of American Otologic Society. T J Harris, New York.—p. 456.
Hereditary Syphilitic Deafness Complicated with Bilateral Middle Ear Suppuration and Mastoiditis. G W Mackenzie, Philadelphia.—p. 483.
Nature of Nystagmus. E R Lewis, Los Angeles.—p. 490.
Actinomycosis of Tongue. Case. J M Banister, Omaha.—p. 495.
Treatment of Purulent Leptomeningitis Secondary to Otitis Media. J E McAskill, Watertown, N Y.—p. 502.
Case of Acute Frontal Sinusitis with Complications. D A Vanderhoof, Colorado Springs.—p. 508.
Six Cases of Definite Mastoiditis in Which Middle Ear Was Definitely Not Affected. B E Hempstead, Rochester, Minn.—p. 517.
Vincent's Angina. P V Mikell, Columbia, S C.—p. 528.
Deflected Septum in Patient in Whom Fatal Result Followed. G H Thompson, North Adams, Mass.—p. 542.
Paranasal Sinus Disease and Asthma in Young Children. D M Lierle, Iowa City.—p. 544.
Bronchiectasis in Child Associated with Paranasal Sinus Disease. A J. Cone, Iowa City.—p. 549.
Nose and Throat in Eight Cases of Diabetes in Children. T S Burgess, Iowa City.—p. 553.
Mega Esophagus. Case. O D Cunningham, Iowa City.—p. 557.
Thrombosis of Lateral Sinus with Extreme Rheumatoid Arthritis (Still's Disease). A M Alden, St Louis.—p. 561.
Problems of Hard of Hearing. H Hays, New York.—p. 564.
Syphilis. Oral Manifestations. W B Tatum, New York.—p. 572.

Association of American Medical Colleges Bulletin, Chicago

1: 1 40 (July) 1926

*Premedical Course. H Cabot, Ann Arbor, Mich.—p. 1.
*Premedical Education. S P Capen, Buffalo.—p. 4.
Neurologic Study Unit in Yale University School of Medicine. H S Burr, New Haven, Conn.—p. 9.
Program of University of Illinois College of Medicine. D J Davis, Chicago.—p. 11.

Premedical Course.—Cabot says that at the University of Michigan they have come tentatively to the conclusion that, as an essential requirement in the premedical curriculum, the modern language is superfluous and might well be omitted except as it is taken purely for its cultural value. It is suggested that some knowledge of anthropology and ethnology, a much more rounded knowledge of abnormal psychology, a broader understanding of sociology and a more thorough grasp of history would have the effect of broadening the view and consequently of enriching the judgment of the medical student. It is Cabot's view that a well planned course covering approximately three years of work in the faculty of letters with some increase in the pressure during the last two years would probably result in a product quite as well equipped as that which now comes to the medical schools with the bachelor of arts degree in a course not particularly selected with a view to developing the qualities most necessary in the future physician.

Experiment in Premedical Education.—Capen believes that the time is ripe for some experimentation with premedical education. Little can be done as long as the present premedical curriculum is practically prescribed for universities and colleges by the national bodies dealing with medical education. The first step is to lift these restrictions. To understand modern life, to play one's part in it as a citizen and particularly as a professional expert, now demands a comprehension of social phenomena, their causes and their control. Is any plan for the education of physicians defensible that deliberately deprives them of the opportunity to become acquainted with these moving forces of modern civilization, except as they may make the acquaintance on their own initiative and in their leisure time? Capen suggests that the medical schools define in terms of achievement, not in semester hours, the minimum necessary for preparation in physics, chemistry and biology. On the basis of such a definition, courses in these subjects especially designed for premedical students could be organized. Courses of this sort need not be less rigorously scientific than those now given to meet the premedical prescriptions; they would only be less extensive, less discursive. Material now reserved for the medical school might be introduced in connection with the scientific courses of the premedical curriculum, particularly in biology and chemistry. Through the medium of other subjects in the premedical curriculum, the work and problems of the doctor could be presented. Indeed, a medical orientation would be possible and profitable in several subjects in the curriculum without impairing their general validity.

Boston Medical and Surgical Journal

195: *61 106 (July 8) 1926*

*Elimination of Iodine in Urine by Normal Persons and in Exophthalmic Goiter Cases. R B Cattell, Boston.—p. 69.
Operations of Choice in Infancy and Childhood. T H Lanman, Boston.—p. 72.
*Cholagogic Properties of Magnesium Sulphate. W L Mendenhall, C W McClure and M Cate, Boston.—p. 76.
Symptomatic Treatment of Tuberculosis. E O Otis, Boston.—p. 80.
Control of Communicable Diseases Prevalent in Massachusetts. Mortality During Past Seventy Five Years. E G. Huber, Washington, D C.—p. 87.

Iodine in Exophthalmic Goiter.—Since iodine is eliminated rapidly from the body, Cattell says that, if benefit is to be derived from its use in cases of exophthalmic goiter, it seems necessary to give an excess of the drug.

Cholagogic Properties of Magnesium Sulphate.—The evidence presented by Mendenhall et al. supports the usual conception that magnesium sulphate is absorbed from the intestine; that small quantities increase bile flow and that large doses decrease the flow.

Canadian Medical Association Journal, Montreal

16: *627 744 (June) 1926*

Cardiac Disease. A McPhedran, Toronto.—p. 627.
Functions and Limits of Sport in Education. R T. McKenzie, Philadelphia.—p. 630.
Infections of Biliary Tract. A T. Bazin, Montreal.—p. 632.
*Determining Basal Metabolism by Electrometric (Katharometer) Procedure. I M Rabinowitch and E V Bazin, Montreal.—p. 638.
*Neuroblastoma in Adults. S Meltzer, Winnipeg.—p. 647.
Etiology of Embryonic Deformities. R J Bean, Halifax.—p. 652.
*Benard's So-Called Laws of First Born and Alternation. M. T. Macklin, London, Ontario.—p. 656.
Sterility Among Hybrids. F N Walker, Toronto.—p. 661.
Abruptio Placentae. S J N Magwood, Toronto.—p. 665.
Posterior Presentations: Treatment. C J Currie, Toronto.—p. 670.
*Blood Matching in Toxemia of Pregnancy. J. H Goodall, Montreal.—p. 673.
Induction of Labor. W A. G. Bauld, Montreal.—p. 677.
Rectal Anesthesia in Obstetrics. R N Ritchie, Montreal.—p. 679.
Obstetrics. End Results. W. W Chipman, Montreal.—p. 681.
Importance of Specific Pollens and Their Optimum Dosage for Desensitization in Hay Fever. D Nicholson, Winnipeg.—p. 683.

High Blood Pressure: Treatment by High Frequency Current. H. R. Nelson, Victoria, B. C.—p. 686.
Compound Dislocation of Lower End of Ulna. S. H. Corrigan, Lampman, Sask., and C. E. Corrigan, Winnipeg.—p. 689.
Hepatic Cirrhosis in Children. R. R. Struthers, Montreal.—p. 694.

Determining Basal Metabolism with Katharometer.—Rabinowitch and Bazin record the results of an electrometric method of determining basal metabolic rates. With this method, the basal metabolic rates are calculated from the rates of carbon dioxide production, as determined by means of a katharometer, which makes use of the physical property of heat conduction of different gases.

Neuroblastoma.—Both the cases recorded by Meltzer occurred in adults. The first case presented a picture of empyema complicated by brain abscess. Malignant disease of the liver was the only diagnosis possible in the second case. In both cases involvement of the bones of the orbit, so characteristic a feature of the disease in childhood, was absent. The first case, although not typical, belongs to the Hutchison, the second to the Pepper, type of neuroblastoma. In the microscopic picture one feature common to both tumors is the absence of rosettes. This raises the possibility of some relationship between the age of the patient, and the findings of rosettes in the microscopic structure.

Laws of First Born and Alternation.—Macklin asserts that in those families in which there is an inheritable abnormality, there is no greater tendency for the first child to be abnormal than there is for it to be normal. Abnormal children in such families may be born subsequent to the birth of a normal first child—indeed they are liable to appear in 50 per cent of cases. There is no greater tendency for the affected to alternate with the normal than would be expected on the basis of chance. All possible arrangements of affected and unaffected appear. Such statements as those of Benard, based on insufficient evidence, are said to be pernicious, in that they warrant conclusions which are wholly unsupported by facts, and which may work to the detriment of individuals either from the eugenic or the medicolegal aspect.

Blood Matching in Toxemia of Pregnancy.—Goodall suggests the existence of some relationship between incompatibility of the blood group of the pregnant woman with that of her fetus, and the development of eclampsia or toxemia.

Colorado Medicine, Denver

23: 185-222 (June) 1926

Bio-Ethnologic Study of Organized Medical Profession of State of Colorado. C. D. Spivak, Denver.—p. 188.
Emergency Ophthalmology. M. Black, Denver.—p. 195.
Pyelitis. W. M. Spitzer, Denver.—p. 198.
Neuroses and Psychoneuroses: Psychiatric Viewpoint. C. W. Thompson, Pueblo.—p. 202.
Mosher-Toti Operation for Chronic Dacryocystitis. C. E. Cooper, Denver.—p. 207.
Psychopathology — Thinking Disturbances. L. H. Ziegler, Denver.—p. 211.
*Experimental Studies of Alleged Synergism of Magnesium Sulphate and Morphine. H. J. Sims, Englewood.—p. 212.

Synergism of Magnesium Sulphate and Morphine.—Sims asserts that if large doses of magnesium sulphate are given subcutaneously, it possesses peculiar relaxation qualities; larger doses are depressing and not consistent with safety; it is a feeble anodyne and very slow in action if given in physiologic doses. Morphine given in combination does prolong its relaxing effect, and magnesium sulphate does not increase the anodynic power of morphine; if so, it is ephemeral. Clinicians who wish to ascertain the relieving qualities of this combination might use it in the following conditions: (1) Delirium tremens; (2) mental confusion and excitement preceding uremia; (3) renal colic; (4) acute polyarthritis, and (5) headaches from extreme hypertension.

23: 223-258 (July) 1926

*Secret Fear. C. S. Bluemel, Denver.—p. 226.
Private Practice and State Medicine. H. Sewall, Denver.—p. 230.
Menace of Unrestricted Medical Charity. J. W. Amesse, Denver.—p. 232.
Idealism in Medicine. F. E. Wallace, Pueblo.—p. 235.
Why Alienists Disagree in Legal Trials. L. V. Tepley, Denver.—p. 237.
Basis of Diet. H. Gauss, Denver.—p. 240.
Fluid Levels and Mode of Intravenous Absorption Following Caudal Injection. D. C. Elliott, Boulder-Denver.—p. 245.
Practical Use of Local Anesthesia. N. Mumey and G. K. Dunklee, Denver.—p. 2[illegible]7.

Secret Fear.—The principal point made by Bluemel is that cognizance should be taken of fear. This applies in the practice of education as well as in the practice of medicine. He believes that there is a fundamental defect in education—that education neglects the emotional life of the child, and addresses itself too persistently to his faculty of memory. The child's education is not properly balanced, and thus he develops emotional difficulties, from which he should rightly be safeguarded. Of late there is a tendency to remedy this defect through the establishment of child guidance clinics and mental hygiene movements, but this emphasizes the fact that the schools have thus far missed their opportunity. Turning to the practice of medicine, one finds the same neglect of the emotions. Inquiry into the patient's subjective experiences rarely goes beyond the matter of appetite and sleep. For the rest, emotional life is disregarded and if the patient goes insane, the sheriff or the psychiatrist is called.

Georgia Medical Association Journal, Atlanta

15: 222-258 (June) 1926

Purposes of Association. F. K. Boland, Atlanta.—p. 222.
Specific Treatment of Malaria. C. C. Bass, New Orleans.—p. 227.
Angina Pectoris. V. P. Sydenstricker, Augusta.—p. 230.
Lung Abscess: Following Tonsillectomy. C. H. Holmes, Atlanta.—p. 233.
Occurrence of Glaucoma. W. H. Cabaniss, Athens.—p. 235.
Treatment of Pruritus Ani. K. C. Rice, Atlanta.—p. 257.

Illinois Medical Journal, Oak Park

49: 441-520 (June) 1926

Medical Aspects of Gallbladder Disease. J. L. Miller, Chicago.—p. 451.
Biliary Surgery. W. P. Herbst, Minneapolis.—p. 455.
Cholecystitis. E. S. Judd, Rochester, Minn.—p. 460.
Diagnosis and Treatment of Most Frequent Types of Goiter. M. S. Underhill, Evanston.—p. 464.
Toxic and Exophthalmic Goiter. H. P. Miller, Rock Island.—p. 466.
Radium in Twenty Cases of Hyperthyroidism. A. J. Larkin, Chicago.—p. 468.
Primary Carcinoma of Appendix: Two Cases. G. S. Van Alstine, Chicago.—p. 469.
Sliding Hernia. P. A. White, Davenport, Iowa.—p. 473.
First (?) American Case of Megacolon. J. R. Pennington, Chicago.—p. 476.
*Acute Cocaine Poisoning. A. L. Tatum, Chicago. —p. 478.
Arthritis Deformans. J. L. Porter, Evanston.—p. 480.
Principles of Physiology Should Govern Casualty Surgery. R. W. McNealy, Chicago.—p. 484.
Postmature Child. C. B. Reed, Chicago.—p. 487.
Common Errors in Care of Infants. M. P. Borovsky, Chicago.—p. 491.
Roseola Infantum. A. S. Traisman, Chicago.—p. 495.
*Heart Block Following Grip Infection. S. J. Taub, Chicago.—p. 497.
Split Fascia Incision for Appendicitis. A. N. Clagett, Chicago.—p. 498.
Treatment of Neurosyphilis: Inoculation with Malaria. J. T. Nerancy, Jacksonville.—p. 499.
Management of Urinary Calculi. L. D. Smith, Chicago.—p. 509.
Chronic Urethritis. C. C. Saelhof, Chicago.—p. 512.
*Mesenteric Thrombosis. B. V. McClanahan, Galesburg.—p. 514.

Treatment of Cocaine Poisoning.—To control the convulsions caused by cocaine poisoning, Tatum uses 100 mg. barbital sodium per kilogram of body weight dissolved in 5 cc. of a saturated solution of paraldehyde in water per kilogram of body weight. The longer the convulsions are allowed to continue before the administration of the hypnotics, the greater is the danger of failure of the treatment; consequently the treatment should be instituted as soon as possible after clonic convulsions appear.

Heart Block Following Grip Infection.—Taub reports a case of heart block complicating a grip infection in a previously normal boy, and which completely disappeared after a period of four weeks, leaving no ill effects.

Mesenteric Thrombosis.—McClanahan reports a case of mesenteric thrombosis occurring in a baby, aged 4 months, whose previous history was entirely negative. The diagnosis was made at operation. Owing to the large portion of ileum involved (about 15 inches [38 cm.]), nothing was done. The baby died.

Indiana State Medical Association Journal, Ft. Wayne

19: 221-260 (June 15) 1926

History of Medical Ethics. G. F. Keiper, LaFayette.—p. 221.
Milk Injections in Gynecology and Obstetrics. G. Gellhorn, St. Louis.—p. 229.
Glioma of Retina: Case. E. E. Holland, Richmond and C. W. Rutherford, Indianapolis.—p. 234.

Applied Biochemistry E N Kime, Indianapolis —p 238
Use of Calcium Salts in Treatment of Tuberculosis. T. J. Beasley, Indianapolis —p 240

19: 261 298 (July 15) 1926

Rat Bite Fever. H. M Baker, Evansville —p 261
Thrombosis of Intracranial Sinuses. C W. Rutherford, Indianapolis. —p 264
Gallbladder Disease F. M Douglass, Toledo, Ohio —p. 270.
Kahn Test W. W. Duemling, Fort Wayne —p 272.
Coccygodynia C. J. Drueck, Chicago —p 275.

Rat-Bite Fever in Indiana.—Three cases of rat-bite fever are reported by Baker, showing that this disease is present in Indiana and should be considered as a possibility in cases of unexplained protracted fever, most especially if there is a history of a bite by any of the smaller animals.

Iowa State Medical Society Journal, Des Moines

16: 255 298 (June) 1926

Sliding Hernia P. A White, Davenport —p 257.
Ectopic Pregnancy. J. W Billingsley, Newton —p 260
Essentials in Drug Therapy G B Crow, Burlington —p 266
Conservation of Uterus in Prolapse. B. Houston, Mason City.—p 270.
Celiac Disease F Moore, Des Moines —p. 273
Asthma and Hay Fever. Z W. Stewart, Iowa City —p 277.
Ovarian Pregnancy · Case R M Mayne, Greene —p. 282
Practical Therapeutics. C. C. Smith, Clarksville.—p 284.

Johns Hopkins Hospital Bulletin, Baltimore

38: 389-443 (June) 1926

*Blood Changes in Convulsions, Especially in Epilepsy. O. Wuth, Baltimore —p 389
*Arteriomesenteric Occlusion of Duodenum B Halpert, Baltimore. —p 409
*Blood Chemistry in Eclampsia. H J. Stander and A H. Radelet, Baltimore —p 423

Blood Changes in Convulsions.—Cases of convulsive states in epilepsy and other "diseases" have been shown to present marked changes in the cellular and chemical blood constituents During convulsions Wuth observed polymorphonuclear leukocytosis and eosinopenia with subsequent oscillations of the curve and definite decline to the normal level; the lymphocytes vary without any definite decline to the normal level; the lymphocytes vary without any definite rule. Nonprotein nitrogen, uric acid, creatinine and serum protein show an increase during or shortly after convulsions. Decrease of leukocytes and of serum protein content combined with increase of the chemical blood constituents in status epilepticus seems to be a bad prognostic symptom The changes are not always uniform in the same or in different individuals The changes are not specific for any disease. The changes are not specific for the convulsive reaction, as they may be found as the result of all physical exertion To a certain degree the changes run parallel with the intensity of physical overactivity. The described changes can be regarded as a secondary phenomenon due to convulsions or physical exertion Wuth says that the theories regarding the causation of epilepsy or the mechanism of the convulsive reaction which are based on the changes of the blood constituents mentioned above will have to be abandoned.

Arteriomesenteric Occlusion of Duodenum.—The results of the anatomic examination in a case of arteriomesenteric occlusion of the duodenum are presented by Halpert. The occlusion was caused by a fold of the mesentery, belonging to a part of the small intestine, displaced into the pelvis minor. Up to the point where this fold crossed the duodenum, the intestine was found to be distended and beyond it, collapsed and emptied The obstruction was located on the pars horizontalis inferior near the point where it curves over into the pars ascendens duodeni. Absence of the pars gastrocolica of the great omentum was noted Since the fusion of the ventral and the dorsal layers of the latter did not take place along the taenia omentalis, the transverse colon was found lower down in the abdominal cavity. Consequently, its mesocolon caused the loops of the small intestine to be shifted down into the pelvis, providing an opportunity for the mesentery of these loops to form an obstructing fold across the duodenum The difference between "arteriomesenteric" and "arteriomesocolic" occlusion of the duodenum is pointed out, and the special importance of such a distinction when surgical intervention is indicated is emphasized. For, in cases of arteriomesenteric occlusion, a duodenojejunostomy (Barker-Stavely operation) is to be considered the rational procedure, whereas resection of the cecum or of the right half of the colon (Bloodgood), or colopexy (Wilkie) is the operation of choice in treatment of arteriomesocolic duodenal occlusion

Blood Chemistry in Eclampsia.—The principal results of the chemical examination of the blood of eclamptic patients, according to Stander and Radelet, are: (1) high uric acid; (2) markedly increased lactic acid, not wholly due to muscular hyperactivity; (3) decrease in the carbon dioxide combining power, which is very pronounced in certain cases; (4) definite tendency toward a hyperglycemia, which is often associated with a high inorganic phosphorus. There is usually no increase in the nonprotein nitrogen of the eclamptic blood. When such an increase is present, it may be associated either with a nephritis, on which the eclampsia has been superimposed, or with the last stages of the disease. Furthermore, there is a slight, but definite, decrease in the blood urea nitrogen. At present, it is not possible to state how far the eclamptic blood picture is dependent on the lesions usually observed in the liver.

Journal of Laboratory and Clinical Medicine, St. Louis

11: 809 909 (June) 1926

Toxicologic Chemistry I Detection of Opium Alkaloids by Selenious-Sulphuric Acid: Specificity of Reaction for Phenolic Group. V. E. Levine, Omaha —p. 809
Effect of Atropine and Role of Involuntary Nervous System in Insulin Action E F Mueller and H B Corbitt, New York —p. 817.
*Effect of Orally Administered Mucic Acid on Renal Function. W. C. Rose and R. W. Jackson, Urbana, Ill —p 824.
Value and Character of *Reports and Records of Tissue Examinations.* L A. Turley, Oklahoma City —p 827.
Cocaine Epinephrine Mixture. Toxicity and Antidote. L E. Ross, *Chicago —p 832*
*Use of Sodium Thiosulphate in *Diagnostic Procedure* C. N. Myers, E Marples, M Groehl and B Throne, New York —p 836.
Preparation of Sodium Morrhuate. R. A. Cutting, Washington, D. C. —p 842.
Inability to Establish Thyroid Tolerance in White Rats J. A. Clarke, Jr, Philadelphia —p *846*
*Renal Function Index. A Bernhard, H. G Jacobi and F. J. Jensen, New York.—p 854
Study of Antigen Used in Wassermann Test for Syphilis. S. L. Leiboff, New York —p 861
*Prognostic Value of Eosinophils in Ear *Infections* V. Brewer, Spokane, Wash —p 865.
*Antiscorbutic Vitamin in Fresh Beef G Medes, Minneapolis —p 871.
*Influence of Focal *Infections* in Diabetes Alterations of Blood Sugar Curve. B Holcomb, Portland, Ore —p 874
Glass Disk as Standard for Determination of Icterus Index of Blood Serum M Preston, New York —p 879
Technic of Pathogen Selective Method of Culture. M. Solis Cohen and A. I. Rubenstone, Philadelphia —p 881
Permanent Standards to be Used with Benedict's "Clinical Quantitative Test" for Sugar in Urine J. A Behre and W. Muhlberg, Cincinnati, —p 887
Method of Quantitative Blood Culture R A. Kilduffe, Atlantic City, N J —p 889
Method for Finding Dibothryocephalus Latus Eggs in Stools. H. B. Schmidt, Detroit —p. 891.

Effect of Mucic Acid on Kidneys.—Investigations made by Rose and Jackson have shown that mucic acid, when administered subcutaneously as its sodium salt, is extremely destructive to the kidneys. The injection of from 0.25 to 0.50 Gm. in rabbits induces a severe nephritis of the tubular type, accompanied by an almost complete or total loss of the power of phenolsulphonphthalein elimination, and an enormous retention of nitrogenous waste products in the blood. In some cases anuria occurs, and persists for a period of from one to two days following the acid administration. These results would seem to indicate that mucic acid is scarcely a safe substance to be employed as a component of human food products.

Use of Sodium Thiosulphate in Diagnostic Procedure.—Myers and his associates discovered that sodium thiosulphate in its active form is useful in the diagnosis of scleroderma in which arsenic is a *contributing* factor. It is employed in such cases as those in which a pigmentation is observed. Continued use of fresh crystals of sodium thiosulphate releases the arsenic that has been deposited either in the skin or along the nerve trunks, until a gradual return of normal conditions is observed. The parchment-like conditions of the skin disappear under treatment and the pigmented areas disappear. A branny desquamation very frequently accompanies clinical improvement. Thus far no evidences of kidney dysfunction have been observed. In fact, quite the reverse is noticed; namely, a stimulation of diuresis. The ingestion of large volumes of fluid is recommended. The patients respond quickly to treatment, and the clinical symptoms improve.

Renal Function Index.—The index of Stander, Duncan and Moses has been studied by Bernhard, Jacobi and Jensen in sixty cases of normal and abnormal kidney function. The normal index has been found not to exceed 18. An index between 18 and 40 is indicative of impairment of renal function, although the blood figures may be within normal limits. Changes in the index in nephritis may be of aid in prognosis. In severe cases of nephritis, indexes higher than 40 have been obtained, in one case reaching 202.

Prognostic Value of Eosinophils in Ear Infections.—While making routine leukocyte examinations in acute or chronic ear infections, Brewer has noticed that when the infection is subsiding the eosinophils appear in the blood stream, together with a lower leukocyte count. The temperature also becomes lower at the same time. The appearance of these cells in the blood or increase in their number apparently may be taken as a favorable prognostic sign.

Antiscorbutic Vitamin in Fresh Beef.—Medes asserts that fresh beef possesses slight antiscorbutic value (sufficient to [illegible]lay scurvy seven days). Meat may be fed to guinea-pigs [illegible] considerable amounts, from 20 to 30 Gm. daily, provided it is used fresh, and the guinea-pigs are put on the diet when sufficiently young.

Influence of Focal Infections on Diabetes.—Holcomb reports the histories of two patients with mild diabetes, to illustrate the effect of focal infection on the glucose tolerance, and rather supports the theory of the infectious cause of diabetes.

Journal of Nervous and Mental Disease, New York

64: 1-112 (July) 1926

Action Tremor. H. de Jong, Amsterdam.—p. 1.
*Intracranial Aneurysms. I. J. Sands, New York.—p. 12.
*Parkinsonism Following Carbon Monoxide Poisoning. R. R. Grinker, Chicago.—p. 18.
Postencephalitic Respiratory Disorders. S. E. Jelliffe, New York.—p. 29.

Intracranial Aneurysms.—A report of a case together with an abstract of the literature is presented by Sands. He says that intracranial aneurysms must be thought of when there are signs of pressure on brain tissue. A bloody spinal fluid with cervical rigidity and Kernig sign, together with cranial nerve lesion, makes the diagnosis very probable. The intermittent character of the symptoms is of value in the arrival at a correct diagnosis.

Parkinsonism Following Carbon Monoxide Poisoning.—An unusual degenerative change in the cerebral white matter following carbon monoxide poisoning is described by Grinker and is best termed myelinopathy. The pathogenesis of carbon monoxide poisoning is probably an initial vascular paralysis followed by asphyxia of structures having a relatively poor capillary supply. There is a definite somatotopic organization of the globus pallidus. "Psychomotor apraxia" is due to a diffuse cerebral lesion and is not of pallidal origin.

Kentucky Medical Journal, Bowling Green

24: 313-350 (July) 1926

Renal Pathology. O. Grant, Louisville.—p. 314.
Blood Sugar in Diabetes Mellitus. J. W. Moore, Louisville.—p. 322.
Diabetes in Pregnancy. A. N. Pickett, Louisville.—p. 324.
Diabetes Mellitus: Treatment. W. A. Jenkins, Louisville.—p. 325.
Congenial Defects of Lips and Mouth. L. W. Frank, Louisville.—p. 331.
Symptoms of Typhoid. C. V. Hiestand, Campbellsville.—p. 335.
Richard Bright. A. H. Barkley, Lexington.—p. 337.
Prophylactic or Preventive Medicine. H. H. Roberts, Georgetown.—p. 340.
Electrotherapeutics in General Practice. L. Felts, Russelville.—p. 344.

Maine Medical Association Journal, Portland

17: 101-114 (June) 1926

Regular Health Examinations. E. H. Bennett, Lubec.—p. 101.
Practical Points in Treatment of Diabetes. R. E. Bousfield, Bangor.—p. 104.

Michigan State Medical Society Journal, Grand Rapids

25: 327-370 (July) 1926

Brief Story of Disease. J. H. Dempster, Detroit.—p. 327.
Goiter. W. L. Finton and A. M. Shaeffer, Jackson.—p. 338.
Rôle of Constipation in Colon Bacillus Infections of Urinary Tract. W. R. Chynoweth, Battle Creek.—p. 341.
Significance of Blood in Urine. D. N. Eisendrath, Chicago.—p. 344.

Radiology, St. Paul

7: 1-92 (July) 1926

Deep Roentgen-Ray Therapy in Treatment of Malignant Disease. W. L. Mattick and B. T. Simpson, Buffalo.—p. 1.
*Combined Treatment of Carcinoma with Roentgen Rays and Intravenous Injections of Dextrose. E. G. Mayer, Vienna.—p. 14.
Ossification in Bone Sarcoma. D. B. Phemister, Chicago.—p. 17.
Bone Malignancy: Roentgenologic Aspect. H. E. Ruggles and L. Bryan, San Francisco.—p. 24.
Surgical Aspect of Bone Tumors. H. W. Meyerding, Rochester, Minn.—p. 29.
Radiation Treatment of Bone Tumors. A. Soiland and W. E. Costolow, Los Angeles.—p. 36.
Actinomycosis of Lungs. G. Turner, El Paso, Texas.—p. 39.
*Lymphoblastoma: Gastric Manifestations. G. W. Holmes, R. Dresser and J. D. Camp, Boston.—p. 44.
Radium Treatment of Carcinoma of Lip. J. Muir, New York.—p. 51.
One Hundred Milliampere Bucky Diaphragm Technic. E. C. Jerman, Chicago.—p. 59.
Syphilis of Stomach: Case. P. B. Mulligan, Shenandoah, Pa.—p. 62.
Carcinoma of Esophagus: Case. J. R. Carty, New York.—p. 63.
Case of Abdominal Pregnancy. R. A. Arens and A. R. Bloom, Chicago.—p. 65.

Roentgen Ray and Dextrose Injections in Carcinoma.—Mayer believes that carcinoma cells are more susceptible to the effects of the roentgen ray when the patient has previously been injected with 10 cc. of a 10 to 50 per cent solution of dextrose.

Lymphoblastoma of Stomach.—Eight cases of lymphoblastoma of the stomach, with roentgen-ray studies of the gastro-intestinal tract, are reported by Holmes, Dresser and Camp. The examinations were either negative, or closely simulated those of gastric carcinoma.

Texas State Journal of Medicine, Fort Worth

22: 59-166 (June) 1926

Crime of Quackery. C. M. Rosser, Dallas.—p. 72.
Romance of Medicine. I. L. McGlasson, San Antonio.—p. 78.
Why Medical Auxiliary. S. A. Collom, Texarkana.—p. 87.
Health Plans for This Year. E. V. DePew, San Antonio.—p. 89.
Transactions of State Medical Association of Texas.—p. 91.

United States Veterans' Bureau Medical Bulletin, Washington, D. C.

2: 651-744 (July) 1926

*Intestinal Tuberculosis. W. C. Davis, Saranac Lake, N. Y.—p. 660.
Nauheim Baths for Cardiovascular Degenerations. J. R. McDill, Waukesha, Wis.—p. 669.
Administrative Value of Clinical Conference. R. D. Maddox, Fort Thomas, Ky.—p. 680.
Constitutional Psychopaths. W. P. Burrier, West Roxbury, Mass.—p. 684.
Drug Addiction. L. M. Brown, Bronx, N. Y.—p. 691.
Surgical Treatment of Maxillary Sinusitis. J. D. Thomas, Boston.—p. 693.
Case of Bilateral Polycystitic Disease of Kidneys. R. L. Harris, Augusta, Ga.—p. 695.
Case of Diabetes Mellitus with Anaphylaxis Following Hypodermic Injection of Insulin. S. E. Walker, Kansas City, Mo.—p. 700.

Roentgen-Ray Diagnosis of Intestinal Tuberculosis.—As roentgen-ray evidence of early intestinal tuberculosis not rarely precedes all subjective symptoms, Davis urges that routine roentgen-ray examinations of all patients with active pulmonary tuberculosis should be practiced. Early roentgen-ray diagnosis and treatment by heliotherapy have revolutionized the outlook in ulcerative intestinal tuberculosis.

Virginia Medical Monthly, Richmond

53: 207-278 (July) 1926

Clinical Importance of Secondary Features of Blood Count in Disease. O. H. P. Pepper, Philadelphia.—p. 207.
Massive Collapse of Lung: Four Cases. H. H. Trout and H. M. Hayter, Roanoke.—p. 214.
*Hernias. E. M. Townsend, Norfolk.—p. 221.
Fall Hay-Fever in District of Colu[illegible] Vicini[illegible] T. Brown, Washington, D. C.—p. 229.
*Mercurochrome Intravenously. W. [illegible]
Determination of Phorias by Pro[illegible] Young, Roanoke.—p. 233.

Miliary Tuberculosis of Choroid. J. N. Greear, Jr. Washington, D. C. —p. 235.
Two Cases of Epidemic Encephalitis. H. T. Hawkins, Clover.—p. 238.
Intracapsular Cataract Extraction. W. Patterson, Richmond.—p. 239.
Prostatectomy: Preoperative Treatment. B. E. Harrell, Norfolk.—p. 241.
Prevention of Acute Lobar Pneumococcus Pneumonia. I. K. Redd, Atlee.—p. 243.
*Ethylene. C. N. Chipman, Washington, D. C.—p. 245.
*Antimony in Vincent's Infections. T. L. Driscoll, Richmond.—p. 248.
Syphilis of Stomach: Case. L. M. Blackford, Rochester, Minn.—p. 249.
Diagnostics of Acute Abdomen. B. F. Eckles, Richmond.—p. 250.

Hernia.—Among 12,490 admissions to U. S. Marine Hospital no. 82, Norfolk, Va., 420 hernias occurred in 359 patients, or 2.8 per cent. Three hundred and thirty-two operations were performed with no mortality.

Mercurochrome Intravenously in Puerperal Septicemia.—In a case of puerperal septicemia, Bowman gave intravenous injections of mercurochrome-220 soluble as a last resort after all other treatment had failed. The patient got well. Only one injection, 23 cc. of a 1 per cent solution, was given.

Ethylene.—Chipman has used ethylene in 1,124 cases. These cases included various minor operations and such major operations as appendectomies, herniotomies, gastro-enterostomy, cesarean section, radical amputation of the breast, thyroidectomy, reduction of fractures, bone work, removal of gallbladder, all kinds of vaginal work and obstetric cases.

Antimony in Vincent's Infections.—In infections due to the pseudosymbiosis of *Bacillus fusiformis* and *Spironema vincentii*, Driscoll commends the use of 5 cc. of 1 per cent solution of antimony and potassium tartrate intravenously on alternate days. A slow injection should be made, with the stomach empty, due consideration being given conditions constituting contraindications for a relatively depressing drug.

West Virginia Medical Journal, Charleston

22: 337-392 (July) 1926

Dilatation and Malposition of Cecum and Ascending Colon Due to Developmental Defects. E. B. Henson, Charleston.—p. 344.
Surgical Aspects of Thyroid. L. H. Schriver, Cincinnati.—p. 349.
Medical Biliary Drainage. M. I. Mendeloff, Charleston.—p. 354.
Chronic Constipation. K. M. Jarrell, Beckley.—p. 358.
Artificial Nose. C. H. Clovis and E. C. Armbrecht, Wheeling.—p. 361.
Cause of Cicatrical Contraction. J. S. Horsley, Richmond, Va.—p. 363.

Wisconsin Medical Journal, Milwaukee

25: 323-370 (July) 1926

Excessive Vomiting of Pregnancy and Eclampsia. W. Thalhimer, Milwaukee.—p. 323.
*Thyroid During Pregnancy: Iodine Therapy. S. Strouse and P. A. Daly, Chicago.—p. 325.
Prevention and Cure of Prolapsus Uteri. R. S. Cron, Milwaukee.—p. 328.
*Enteroid Infection: Five Cases. A. J. Patek, Milwaukee.—p. 330.
Pleomorphism of Secondary Invaders in Urethral Infection Simulating Gonococcus. C. C. Saelhof, Chicago.—p. 334.
Pellagra in Wisconsin. R. L. McIntosh and W. P. Blount, Madison.—p. 338.
Cancer of Stomach in Man Aged Twenty-Four. J. R. Head, Chicago.—p. 342.
Glycosuria Without Hyperglycemia in Pregnancy: Case. W. C. Edwards and R. F. Breeden, Richland Center.—p. 343.
Tetanus: Case. L. Milson and H. Hendrickson, Green Bay.—p. 345.

Thyroid During Pregnancy.—Pregnancy, by increasing the need for thyroid activity, makes excessive demand on the thyroid, diminishes the store of iodine contained therein and, unless the intake of iodine is increased, may produce a state of functional or physiologic overstrain of the thyroid. The result of this strain would be a clinical picture of hyperthyroidism. Such a state of affairs was found to exist in a series of sixty-one patients seen by Strouse and Daly. Iodine therapy relieved the syndrome completely. This study suggests the advisability of increasing under cautious control the iodine supply of the pregnant woman in order to prevent the onset of this syndrome.

Enteroid Infection.—The five cases reported by Patek, while definitely not typhoid, more nearly suggested a paratyphoid, or another kindred disease due to a bacterium intimately resembling it. It seems proper to him to label this type of intestinal infection with the noncommittal designation "entero d."

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian Journal of Experimental Biology and Medical Science, Adelaide

3: 45-114 (June 16) 1926

Inadequacy of Conception of Neurone as Unit of Conduction of Nervous System. O. W. Tiegs.—p. 45.
Structure of Neurone Junctions of Spinal Cord. O. W. Tiegs.—p. 69.
Refrigeration of Meat. II. Freezing of Beef and Mutton Press Juices. J. R. Vickery.—p. 81.
Mitochondria of Paramecium. E. S. Horning.—p. 89.
Function of Lipoid in Mitochondria. T. B. Robertson.—p. 97.
Permeability of Polarized Membranes in Relation to Permeability of Nucleus and Proportions of Various Amino-Acids Contained in Proteins. T. B. Robertson.—p. 105.

Biochemical Journal, London

20: 217-446, 1926

Secondary Oxidation of Substances of Physiologic Interest. D. C. Harrison and S. Thurlow.—p. 217.
*Effect of Copper Compounds on Growth of Carcinoma in Rat. I. Hieger.—p. 232.
Inhibitory Effect of Sugars on Saponin Hemolysis. E. Ponder and W. P. Kennedy.—p. 237.
Influence of Neutral Salts on Hemolysis. W. P. Kennedy.—p. 243.
Heat Stable Peroxidase of Bacteria. A. B. Callow.—p. 247.
*Concentration of Diastase in Urine Throughout Day. I. Cohen.—p. 253.
Glucose in Blood. G. S. Lund and C. G. L. Wolf.—p. 259.
Estimation of Glucose in Biologic Material. H. F. Holden.—p. 263.
*Action of Light on Blood. D. T. Harris.—p. 271.
Photo-Oxidation of Plasma: Its Sensitization. D. T. Harris.—p. 280.
Velocity of Photo-Oxidation of Proteins and Amino-Acids. D. T. Harris.—p. 288.
*Chemistry of Thyroxin. I. C. R. Harington.—p. 293.
Id. II. Desiodo-Thyroxine. C. R. Harington.—p. 300.
*Intermediary Metabolism of Carbohydrates. H. W. Dudley.—p. 314.
Variation in End-Products of Bacterial Fermentation Resulting from Increased Combined Oxygen in Substrate. H. D. Kay.—p. 321.
*Biologic Value of Bread-Protein. M. Hindhede.—p. 330.
Effect of Irradiation of Environment with Ultraviolet Light on Rats, Fed on Diet Deficient in Vitamin A. II. E. M. Hume and H. H. Smith.—p. 335.
*Production by Irradiation with Ultraviolet Light of Antirachitic Properties in Sterols Derived from Small Siak Illipe Nut (Palaquium Burckii). E. M. Hume and H. H. Smith.—p. 340.
Carbohydrate and Fat Metabolism of Yeast. III. Nature of Intermediate Stages. I. S. Maclean and D. Hoffert.—p. 343.
*Action of Yeast of Lactic Acid. D. Hoffert.—p. 358.
*Effect of Ultraviolet Light on Calcium and Phosphorus Metabolism of Lactating Animal. J. M. Henderson and H. E. Magee.—p. 363.
*Chemical Nature of Oxytocic Principle of Pituitary Gland. W. V. Thorpe.—p. 374.
Calcification in Vitro. P. G. Shipley, B. Kramer and J. Howland.—p. 379.
Possible Significance of Hexosephosphoric Esters in Ossification. R. Robinson.—p. 388.
*Rôle of Insulin in Phosphorus Metabolism. S. Kolodziejska and C. Funk.—p. 392.
Action of Pure Phosphatides on Perfused Heart of Frog. P. Eggleton.—p. 395.
Biologic Significance of Unsaponifiable Matter of Oils. I. Unsaturated Hydrocarbon, Squalene (Spinacene). H. J. Channon.—p. 400.
*Id. II. Unidentified Unsaturated Hydrocarbon Present in Mammalian Liver. H. J. Channon and G. F. Marrian.—p. 409.
Modification of Deflection Balance for Use in Biochemical Laboratories. J. W. Trevan.—p. 419.
*Estimation of Calcium in Blood Serum. H. W. Trevan and H. W. Bainbridge.—p. 423.
Influence of Fatty Acids and Their Salts on Alcoholic Fermentation by Living Yeast. I. Acetic and Formic Acids and Their Sodium, Potassium and Ammonium Salts. H. Katagiri.—p. 427.
Purine Metabolism. I. Variations in Nuclear Plasmic Ratio in Adult Albino Rat. II. Synthesis of Purines by Adult Mammalian Organism. R. Truszkowski.—p. 437.

Effect of Copper Compounds on Growth of Carcinoma.—In some series of rats Hieger noted that the administration of copper with the food appears to check the growth of carcinoma, but this effect is not obtained constantly.

Concentration of Diastase in Urine.—Cohen asserts that the rate of appearance of diastase in the urine is greater during the daytime than at night. This higher rate during the period of meals is not due to the taking of food. Variations occur from day to day in the total daily and nightly output of diastase in healthy persons. It is therefore clear that no significance can be placed on figures unless they differ markedly from the normal over a period of several hours.

Action of Light on Blood.—According to Harris, irradiation of blood with ultraviolet rays causes it to give up oxygen at high oxygen tensions and to take up oxygen at low tensions. At about 15 mm. tension of oxygen, there is gaseous equilibrium, no net change occurring on passing from the dark into the light. The taking up of oxygen by blood in ultraviolet irradiation is a property of the plasma.

Isolation of Thyroxin from Thyroid.—A method is described by Harington by which thyroxin may be isolated from the thyroid gland in a yield of about 0.12 per cent of the dried gland. The probable empiric formula of thyroxin is said to be $C_{15}H_{11}O_4NI_4$.

Glyoxalase Content of Rabbit's Muscle.—Foster's observation that rabbit's muscle, unlike all other muscle so far examined, fails to yield an aqueous extract in which the enzyme glyoxalase is clearly demonstrable, is confirmed by Dudley. Her conclusion, however, that glyoxalase is absent from this tissue is shown to be erroneous, since it can be detected in alkaline extracts. The hypothesis that in muscle there may be two distinct metabolic paths for the production of lactic acid from carbohydrate is thus deprived of experimental support.

Biologic Value of Bread Protein.—Hindhede concludes that 3.5 Gm. of digestible nitrogen, equivalent to 22 Gm. of digestible bread protein, is sufficient to keep young, vigorous men in protein balance.

Antirachitic Properties of Nut Sterols.—A mixture of sterols, from the fat of the small *Siak illipe* nut, was irradiated with ultraviolet rays by Hume and Smith, whereby the power of promoting growth and calcification in young rats, on a diet deficient in fat soluble vitamins, was imparted to the sterols. The mixture of sterols contained no appreciable quantity of vitamin A, either before or after irradiation.

Action of Yeast on Lactic Acid.—Hoffert's experiments show that while lactic acid is undoubtedly destroyed by yeast, the evidence available does not make it necessary to assume either the formation of a nonhydrolyzable carbohydrate or the formation of protein with a higher carbohydrate content.

Effect of Ultraviolet Rays on Lactation.—In four balance experiments made by Henderson and Magee on lactating goats, irradiation by the carbon arc lamp reduced the fecal excretion of calcium. The effect on the excretion of phosphorus was less constant. It seems probable that irradiation increases the stimulus to calcium storage, pregnancy and diminishes the calcium loss during full lactation. A definite increase in the urinary excretion of calcium on irradiation was noted in only one experiment in which there was already retention of calcium. The influence of ultraviolet rays in minimizing the depletion of minerals is briefly considered with respect to certain pathologic conditions which may occur in heavy milking animals.

Chemistry of Oxytocic Principle of Pituitary.—The destruction of the oxytocic principle of the posterior lobe of the pituitary gland by ordinary "trypsin" preparations, Thorpe asserts, is due in fact to the trypsin and not to the lipase that it contains. This supports the hypothesis that the principle contains a peptide linkage in its molecule. A method of making a lipase-free trypsin preparation is described.

Rôle of Insulin in Phosphorus Metabolism.—The metabolism experiments made by Kolodziejska and Funk on the phosphorus partition in the urine and feces under the action of insulin on a diet containing phosphorus, as well as on a diet devoid of phosphorus, show that the total phosphorus metabolism remains practically unaffected. The same conclusions can be reached if the animals are analyzed in toto on a phosphorus free diet under the influence of insulin. No difference in the phosphorus content of insulinized animals was found as compared with the controls. Insulin seems to play an insignificant rôle in the total phosphorus metabolism.

Hydrocarbon in Liver.—Channon and Marrian claim that there is present in the liver of man, the ox, sheep, horse and pig, a highly unsaturated hydrocarbon which has not been isolated in a pure state. The hydrocarbon yields a crystalline hydrochloride and a solid addition product with bromine. Analyses of these derivatives are given. The hydrocarbon does not distil at a pressure of 2 mm., but decomposes, yielding what appear to be terpenes. From a consideration of the results obtained, it appears probable that the hydrocarbon is not squalene but a substance closely allied to it. Squalene was apparently absent from the livers investigated.

Estimation of Calcium in Blood Serum.—A method of estimating calcium is described by Trevan and Bainbridge in which the calcium is precipitated as oxalate and converted into calcium carbonate by heating the centrifuge tube in which it is separated and washed. The calcium carbonate is titrated with acid. The method is said to have the advantages that the end point is more distinct than that of a permanganate titration, and all washing is carried out with saturated ammonium oxalate, thus avoiding errors due to the solubility of calcium oxalate in water.

Kenya Medical Journal, Nairobi, East Africa

3: 61-90 (June) 1926

Frambesia Tropica in Kikuyu Province. J. C. J. Callanan.—p. 62.
*Treatment of Blackwater Fever. R. W. Burkitt.—p. 89.

Treatment of Blackwater Fever.—In Kenya, the acidosis accompanying malaria is overcome by injecting intravenously 2 pints of physiologic sodium chloride solution containing 1 ounce of sodium bicarbonate. Then, to combat the malaria without causing return of the acidosis, Burkitt says he gives 2 teaspoonfuls of tincture of cinchona in water every three hours, increasing this rapidly to liquid extract of cinchona and finally to quinine. He suggests that the whole bark, or total alkaloids, will not bring on blackwater in saturated cases of malaria, if given in small amounts, as quinine does.

Okayama Medical Journal, Okayama, Japan

436: 503-610 (May) 1926

Physiology of Thyroid Gland and Parathyroids: Relation Between Thyroid and Parathyroids and Their Influence on Basal Metabolism. Y. Takahasi.—p. 503.
Action of Certain Bile Acids on Autodigestion of Liver. T. Hosokawa.—p. 532.
Spleen and Stomach Secretion. M. Kobayashi.—p. 564.
Influence of Hepatotoxin on Acetone Forming Function of Liver. M. Kobayashi and M. Oka.—p. 573.
Pharmacologic Action of Tyramine and Phenylethylamine. M. Yamauchi.—p. 596.

Practitioner, London

117: 1-68 (July) 1926

Hygiene in Royal Navy. J. Chambers and G. L. Buckeridge.—p. 1.
Complications of Duodenal Ulcer. C. Rowntree.—p. 12.
Surgical Significance of Albuminuria. J. B. Macalpine.—p. 20.
*Treatment of Children Recovering from Acute Cardiac Affections. L. T. Thorne.—p. 29.
Senile Hip. R. G. Gordon.—p. 36.
Treatment of Cases of Terminal Cachexia. L. M. Jeffries.—p. 43.
Treatment of Large Caliber Strictures with Kollmann Dilators. H. L Attwater.—p. 52.
Clinical Disorders of Capillary Circulation. H. M. Walker.—p. 56.

Nauheim Baths for Young Cardiac Patients.—Thorne asserts that in cases of dilated hearts in children, the sequelae of myocarditis, endocarditis, or pericarditis resulting from rheumatic or other infection, a course of Nauheim baths will restore the patient to health much more rapidly, certainly and surely than any other form of treatment.

Tohoku Journal of Experimental Medicine, Sendai, Japan

7: 221-410 (June 30) 1926

Urea-Nitrogen Concentration of Blood. III. Effect of Vegetative Nervous System. K. Tashiro.—p. 221.
Id. IV. Effect of Guanidine and Insulin on Blood Urea-Nitrogen Concentration. K. Tashiro.—p. 268.
Technic of Indigo Carmine Test: Excretion of Dye by Healthy Kidney. M. Koike.—p. 278.
Complement Fixation Reaction in Urogenital Tuberculosis. I. Influence of Urine on Hemolytic System. M. Takahata.—p. 293.
Food Poisoners, Especially Bacillus Aertrycke. K. Sakai.—p. 307.
Epinephrine Hyperglycemia in Rabbit. S. Hirayama.—p. 346.
Urethane Hyperglycemia and Glycosuria in Rabbit. S. Hirayama.—p. 364.
Sugar Content of Lymph and Channels of Absorption from Intestine for Carbohydrate. S. Katsura.—p. 382.

Archives de l' Institut Pasteur de Tunis

15: 71-196 (June) 1926. Partial Index

*The Weeks' Bacillus. P. Durand and U. Lumbroso.—p. 71.
Experimental Myectoma in Rabbits. J. Reenstierna.—p. 101.
*American Tegmental Leishmaniasis. C. Nicolle.—p. 108.
*The Streptobacillus of Chancroid. P. Durand.—p. 128.
Experimental Malta Fever. E. Burnet.—p. 132.

The Weeks' Bacillus and the Influenza Bacillus.—The extensive research reported apparently demonstrated that, except for its origin in acute conjunctivitis, there is nothing to distinguish the Weeks' bacillus from the influenza bacillus, either morphologically or by serologic, biochemical or cultural tests. In a second communication, however, Durand, Anderson and Lumbroso report that the two species respond differently to agglutination with lactic acid. This is the only means discovered to differentiate these bacilli in vitro.

American Tegmental Leishmaniasis.—Nicolle reports the results of his mission to Argentina to study this disease.

Chancroid.—Durand found the Ducrey streptobacillus in pure cultures in the buboes with chancroid.

Bulletin de l'Académie de Médecine, Paris

95: 631-651 (June 29) 1926

*Neutralization of Hydrocyanic Acid by Glucose. H. Violle.—p. 644.
*Congenital Subluxation of the Hip Joint. Calot.—p. 647.

Rôle of Glucose in Prophylaxis of Hydrocyanic Acid Poisoning.—Rabbits were given glucose, and then were transferred to and enclosed in an atmosphere containing hydrocyanic acid gas. All these animals developed phenomena of intense reaction; but they survived, although the quantity of the hydrocyanic acid absorbed was many times the lethal dose. The results were the same with glucose injected in a vein or in the peritoneum; slower, with glucose given by the mouth. It is possible that glucose could be advantageously used as a prophylactic measure in factories in which cyanides are handled, or where workers are exposed to the fumes of hydrocyanic acid.

Diagnosis of Congenital Subluxation of the Hip Joint from the Shape of the Femoral Head and Neck.—Calot's conclusions are based on several thousand clinical and radiographic observations, and one hundred anatomic examinations. Hypertrophy, deformity and partial displacement of the femoral head were found in 90 per cent of congenital subluxations of the thigh bone. The neck of this bone was short, stubby and tilted forward. These pathognomonic features and the bilateral symmetry of the roentgenologic picture, associated with rarefaction of the bone tissue of the head and neck, make the differential diagnosis from tuberculosis, syphilis, Paget's disease, trauma or other origin easy. The presence of gross anatomic lesions, on both sides, was noted in 50 per cent of all cases, even when there was no functional disturbance of the other hip joint. The peculiar aspect of the acetabulum consisted in the presence of two fossae or in a shedlike form.

Journal d'Urologie Médicale et Chirurgicale, Paris

21: 385-480 (May) 1926

*Cancer of the Prostate. G. Marion.—p. 385.
Technic of Nephrectomy. C. A. Perret.—p. 397.
*Congenital Dilatation of Upper Urinary Tract. R. Bouchard.—p. 413. C'cn.

Cancer of the Prostate; Its Treatment.—Marion's statistics include forty-eight operations for cancer of the prostate. In six, the malignant process was limited to the periurethral adenoma; in two, to the prostate; in the others, the prostate and periurethral adenoma were involved. The postoperative mortality was about 10 per cent—only a little higher than that after removal of an enlarged prostate gland. Recurrences were observed in fourteen, in from a few months to four years after the intervention. Twelve died from different causes, micturition being conserved in all till the end. In three the clinical cure has lasted from four and a half to ten years. He holds the suprapubic route of operation to be more advantageous than the perineal route. In case of a cancerous adenoma, the prostate and vesicles should also be removed. He warns against the use of the sound before the fifteenth to the twentieth day after the operation. Two cases of fatal pyelonephritis seemed possibly to be due to early use of the sound.

Primary Congenital Dilatation of the Renal Excretory Tract.—Bouchard emphasizes the fact that the anatomic and clinical features of congenital dilatation of the renal pelvis and ureter present a peculiar type of ectasia. The affection may involve the pelvis or the ureter, or both; also the ureteral orifices. It may be unilateral or bilateral. The early occurrence of the affection, the absence of a mechanical obstacle or of lesions of the nervous system, also coexistence of other malformations testify to the congenital nature of the dilatation. The pathogenesis is explained by a dystrophic disturbance similar to that causing dilatation of the bladder, colon, rectum or a polycystic kidney. The congenital lesion seems to attack first the nerve fibers, inducing atony, then dilatation of the pelvis and ureter. The secretory activity of the kidney remains satisfactory. The dilatation is sometimes detected by means of cystoscopy or catheterization of the ureter, but especially by pyelography or cystopyelography. While a unilateral dilatation is often cured, treatment in a bilateral case can afford only relief.

Médecine, Paris

7: 565-640 (May) 1926

Therapeutic Electroradiology in 1925. A. Zimmern.—p. 565.
Radiotherapy of Infections. J. Belot.—p. 583.
Electroradiologic Treatment of Anterior Poliomyelitis. Laquerrière and Delherm.—p. 586.
General Toxic Action from Penetrating Rays. S. Laborde.—p. 591.
Differences of Potential in Therapeutics. J. L. Pech.—p. 596.
Prophylaxis of Rickets. P. F. Armand-Delille.—p. 598.
Physiotherapy of Rheumatism. H. Dausset.—p. 602.
Oxydase Reaction of Mineral Waters. Mougeot and Aubertot.—p. 609.
Oxydation Ferments and Mineral Waters. Mougeot and Aubertot.—p. 615.
Artistic and Medical Gymnastics. L. Lamy.—p. 621.
*Metabolism in Treatment of Obesity. R. Faillie.—p. 625.

Basal Metabolism in Treatment of Obesity.—Faillie specifies that the basal metabolism should be taken into consideration in treatment of obesity. In the obese with increased metabolism, the amount of the food should be restricted. Rest is required if the respiratory quotient is high; on the contrary, active or passive physical exercise is required if it is low or normal. In this condition, loss of weight occurs easily. A normal basal metabolism in the obese usually indicates slight endocrine deficiency. Therefore small doses of thyroid extract may help. In cases with a decreased metabolism, ultraviolet rays or radioactive mineral waters may be advantageously used. One of their patients, a woman weighing 116 Kg., lost 23 Kg. in four months under exclusive ultraviolet ray treatment.

Revue de Chirurgie, Paris

63: 119-206, 1926

Early Resection in Osteomyelitis. J. Leveuf and M. Béchet.—p. 119.
*Lung Complications After Operations on Stomach. P. Razemon.—p. 156.

Pathogenesis of Lung Complications After Operations on the Stomach.—Stasis in the lung or injury to the terminal branches of the vagus may be responsible for pulmonary complications after operation on the upper part of the abdomen. In ulcer or cancer of the stomach, the gastric fibers of the vagus are frequently involved in the inflammation. This reflects on the trophic function of the lung parenchyma, reducing its resistance to infection. The infection seems to be caused chiefly by enterococci. The microbes are readily absorbed by the diaphragmatic peritoneum, whence they are carried to the lung by the lymph vessels of the diaphragm. Enterococcus vaccine was applied in 300 patients before an operation for gastric disease. No grave pulmonary complications occurred. The vaccine was used only in patients with a positive intradermal reaction to the enterococcus, namely, in 15 per cent. In nineteen cases, operation was done without preliminary test or vaccination. Death from pulmonary complications occurred in two of these.

Lisboa Médica, Lisbon

3: 217-272 (May) 1926

*Sphincter Disturbances and Spina Bifida. Egas Moniz.—p. 217.
Radiography of Calculi in the Bladder. A. Gomes.—p. 249.

Sphincter Disturbances and Occult Spina Bifida.—Egas Moniz concludes from his study of five cases of spina bifida that some of the disturbances generally attributed to spina bifida may be due to other causes, bands, compression from a tumor, or atrophy of nerve roots. He claims that the centers for controlling the bladder sphincter are at the first sacral vertebra, while those for erection and ejaculation are at the second, and that for the anal sphincter is at the third and fourth. Adhesions stretch the roots rather than compress them, and the disturbance is more functional than anatomic. Consequently function recuperates at once when the adhesions are severed. This was noticeable in one of his cases. It could not occur so rapidly if the root had to wait to regenerate. With compression and traumatism of nerves, regeneration is always slow. In his operative case a small lipoma was found which had not been detected beforehand; the band responsible for the symptoms was found lower down. Among the remote disturbances from spina bifida that have been recorded are enuresis, retention, incontinence of the anus, modification of certain reflexes, sensory disturbances, prolapse of the uterus, vagina or rectum, trophic lesions, trophedema, muscular atrophy, clubfoot, mal perforans, scleroderma, bone and joint anomalies, and infantilism, and he adds to the list adiposogenital dystrophy, noted in one of his cases.

Revista Española de Med. y Cirugía, Barcelona

9: 331-394 (June) 1926

*Neo-Arsphenamine in Treatment of Mumps. P. Farreras.—p. 331.
Recent Progress in Treatment of Dyspepsia. J. M. Rosell.—p. 334. C'tn.
Sanocrysin in Treatment of Tuberculosis. Campos.—p. 339.
Medical Treatment to Supplement Surgery. F. Bascompte.—p. 340.

Arsphenamine in Epidemic Parotitis.—Farreras reports excellent results from an intravenous neo-arsphenamine injection in treatment of mumps in thirty-one soldiers. Some were given a second injection. The pain, dysphagia and trismus were improved at once and the course of the disease was much shortened. Three of the patients presented a Herxheimer reaction. Kermorgant has recently isolated a spirochete in mumps, but the Wassermann test is negative.

Revista Médica Latino-Americana, Buenos Aires

11: 1111-1272 (April) 1926

Radiotherapy and Oncology. G. Fichera.—p. 1111.
*Treatment of Sterility and Dysmenorrhea. J. Iribarne.—p. 1136.
Stiller's Congenital Asthenia. M. J. Barilari.—p. 1151.
Extrapyramidal Motor Syndromes. A. S. Marotta.—p. 1175.
*Toothache Secondary to Otitis Media. E. Casterán.—p. 1225.

Simplified Surgical Treatment of Dysmenorrhea and Sterility.—Iribarne's illustrations show the perforated silver tube which he introduces into the cervix of the uterus after it has been slit on both sides up to and including the internal os. The tube flares below into two flat wings, and thus fits exactly against the walls of the enlarged passage as modified by the discission, and forms a guide over which the parts heal to form a broad, nearly vertical, flaring passage—as in a multipara—instead of the previous horizontal, more or less completely obliterated canal. The tube corrects the anteflexion as well as the stenosis. There is no need for covering the raw surface with mucosa; the discission alone answers the purpose if the lips of the incision are held apart until healing is complete. The principle is thus different from the classic methods, and he claims priority (1916).

Toothache of Otitic Origin.—Casterán relates that he has encountered a number of cases of otitis media in which pain in the teeth was the predominant element in the clinical picture. The dentists could find nothing to explain the odontalgia, but it subsided at once and permanently after the cure of the ear affection, or even after mere paracentesis. There was nothing to indicate seepage of pus, and the crossing of the nerve fibers in Arnold's ganglion readily explains the secondary neuralgia and its limitation to certain lower teeth.

Revista Médica del Rosario

16: 75-133 (May) 1926

*Acrodynia. J. C. Recalde Cuestas.—p. 75.
The Clinical Dosage of Insulin. E. S. Weiler.—p. 83.
Action and Uses of Trinitrin. Clemente Alvarez.—p. 88. C'cn.
Case of Sepsis from Staphylococci plus Gonococci. Landivar and Raralt.—p. 103.
Evils of Milk Lacking in Vitamins. Navarini.—p. 107.
Polycystic Kidney. D. Staffieri.—p. 115.

Acrodynia.—Recalde Cuestas relates that dengue appeared at Rosario in 1925, the first recorded instance of its prevalence. At the same time he encountered eight cases of acrodynia or "pink disease" in children, aged from 6 weeks to 3 years. The clinical picture included fever for three days, with sudden decline as an eruption appeared. There was no desquamation. The blood count was characteristic: extreme leukopenia, with considerable reduction in the numbers of polymorphonuclears, and high relative mononucleosis. Recovery was prompt and complete. An erythematous pharyngitis was constant, and one child presented intense otalgia and another extreme general hyperesthesia.

Semana Médica, Buenos Aires

1: 1113-1176 (May 27) 1926

*Sanocrysin in Tuberculosis. G. Aráoz Alfaro et al.—p. 1113.
*Tuberculin in Tuberculous Rheumatism. J. J. Viton.—p. 1148.
Sanocrysin in Tuberculosis. Patiño Mayer and Schivo.—p. 1155.
Case of Enterococcus Septicemia. J. R. Goyena and L. J. Caorsi.—p. 1169.

Sanocrysin in Treatment of Pulmonary Tuberculosis.—Thirty-five pages are devoted to the minute details of fourteen cases with systematic sanocrysin treatment since November, 1925. One patient did not tolerate the treatment and no effect was apparent in another; the others all seemed to benefit. The ordinary measures were all applied at the same time, as usual.

Tuberculin in Diagnosis and Treatment of Tuberculous Rheumatism.—Viton expatiates on the advantages of an early tuberculin test in the disturbances forming the clinical picture of Poncet's tuberculous rheumatism. When it is recognized early and systematically treated with extremely minute doses of tuberculin, serious disturbances may be thus averted. He declares that it is much more common than generally recognized. It may be engendered by a tuberculous process elsewhere, and may run a recurring or persistent chronic course; the failure of salicylates in treatment should suggest its true nature. He reiterates that nothing equals tuberculin in efficacy.

1: 1177-1240 (June 3) 1926

First Monkey Testicle Implant in Man in Argentina. Spurr.—p. 1177.
Organized Prophylaxis and Welfare Work for the Tuberculous in 1925. R. A. Vaccarezza.—p. 1183.
Arthroplasty on Ankylosed Ankle. G. Bosch Arana and O. Ratto.—p. 1200.
Treatment of Fibroma Praevia. J. Bazán.—p. 1203.
*Hemoptysis and Menstrual Reactions in the Tuberculous. A. Cetrángolo.—p. 1205.
*Multiple Anthrax Pustules. E. A. Molinelli.—p. 1207.
The Greater Omentum in Abdominal Surgery. Hernández.—p. 1211.
Asthma of Malarial Origin. I. Auday and E. L. Arana.—p. 1214.
Volvulus of the Spermatic Cord. M. Sandberg.—p. 1216.
Contagion from Therapeutic Inoculation of Malaria. C. Kling.—p. 1217.
Auditory Acuity. V. Ribón.—p. 1219.

Organotherapy of Hemoptysis and the Menstrual Reactions of the Tuberculous.—Cetrángolo reports excellent results in respect to warding off the menstrual reactions in tuberculous women by intramuscular injections of corpus luteum extract, beginning eight or ten days before the period, and making the injection on alternate days. For years he has been making a practice of ovarian treatment, with revulsion to the legs, to attenuate the menstrual reactions in the tuberculous, but has found the corpus luteum extract more dependable. He theorizes to explain the mechanism of this, and quotes Sabourin's remark that many tuberculous women are killed by their menstruation. He also cites the conclusions of Leuret and Caussimon's study of the way in which the menstrual process in the tuberculous differs from the normal, and the dangers which this portends.

Multiple Anthrax.—Although anthrax is common in Argentina, Molinelli does not know of but one other instance in which four typical anthrax carbuncles developed. The patient was a young butcher; the pustules healed under peptone treatment.

Siglo Médico, Madrid

77: 577-604 (June 26) 1926

*Sedimentation Speed in Children. C. Juarros and P. Galarieta.—p. 577.
Dyes in Treatment of Gonococcus Infection. A. Pulido Martin.—p. 580.
Gangrene from Perforation of Appendix. Doronsoro and Colsillo.—p. 583.

Sedimentation Test in Abnormal Children.—Juarros and Galarieta conclude from their experience with thirty-five children that the suspension stability of the blood is materially reduced in cases of an acute inflammatory process. This has no diagnostic value in itself, but it reveals that conditions are not normal. It proved particularly useful in certain nervous affections, demonstrating or not the persistence of an active inflammatory process. The Westergren technic was followed. The sediment was 6 mm. or more in twelve of the children, and all these presented signs of congenital syphilis or adenoids, epilepsy or incipient Pott's disease, or were convalescing from meningitis.

Archiv für Kinderheilkunde, Stuttgart

78: 83-240 (June 4) 1926

*Hydrocephalus and Rickets. H. Koeppe.—p. 83.
Diphtheria Toxin-Antitoxin. H. Nothmann.—p. 112.
The Blood in Purulent Infections E. Stettner.—p. 128.
*Incurable Rickets. A. Schier and A. Stern.—p. 176.
*Weight of New-Born and Vitamins. H. Abels.—p. 187.
*Jaundice of New-Born. P. Kaufmann.—p. 193.
Conception of Vitamins. W. Kollath.—p. 195.
Pathology of Twins. J. Siegl.—p. 198.
Puncture of Spleen. E. Nassau.—p. 203.
Feer's Disease. A. Bratusch-Marrain.—p. 206.

Hydrocephalus and Rickets.—Koeppe found that a high tympanic percussion sound of the skull indicates an increased intracranial pressure in children. He has observed it in eight cases of cerebral infantile paralysis. The diagnosis of hydrocephalus would hardly have been made otherwise, since the most important symptom—enlargement of the head—was not present. Yet the pressure of the cerebrospinal fluid was increased and encephalography also confirmed the diagnosis of occult hydrocephalus. All these children were suffering from rickets and recovered after treatment of this disturbance. Therefore, he regards the syndrome as a manifestation of cerebral rickets. Lumbar puncture and diet are sufficient in treatment.

Incurable Rickets.—Schier and Stern report the history of a prematurely born infant who developed, at the age of 2 months, florid rickets and died at the age of 17 months. All the methods of treatment of rickets had been tried during that time without any effect.

Weight of New-Born and Vitamins.—Abels concludes that the lowering of the average weight of the new-born, during the winter after the war, is established with great certainty in Vienna. He also believes that there is sufficient statistical evidence that this was due to the lower vitamin content of the mothers' food.

Jaundice of the New-Born.—Kaufmann found no influence from a cinchophen derivative on the jaundice of the new-born.

Biochemische Zeitschrift, Berlin

173: 363-484 (June 25) 1926. Partial Index

Action of Epinephrine on Photographic Plate. H. Vollmer.—p. 389.
*Quantitative Test for Bile Acid Salts. P. Szilárd.—p. 440.

A Colorimetric Method for Quantitative Determination of Bile Acid Salts in Blood.—Szilárd extracts blood plasma with alcohol and precipitates the bile acid salts with ether. The precipitate, when dissolved in distilled water, will react with ferric chloride proportionally to the amount of bile acid salts in solution. This product dissolved in alcohol gives a bright red color reaction with sulphosalicylic acid, and is compared with the standard made up in the same way from the sodium salt of glycocholic acid. The method is very sensitive, and gives a positive reaction in blood of healthy persons. It can also be used to test duodenal content. Results of the test under pathologic conditions will be reported later.

Medizinische Klinik, Berlin

22: 983-1022 (June 25) 1926

Angina Pectoris. H. Kohn.—p. 983. C'td.
Vegetative Nervous System. F. Glaser.—p. 986. C'cn.
*Adhesive Pleurisy, Tuberculosis and Pneumonia. H. Koopmann.—p. 989.
Zosteriform Chickenpox. R. Ziel.—p. 991.
*Shock Treatment in Gastric Ulcer. V. Grömer.—p. 991.
Smell and Diagnosis. E. Ruediger.—p. 993.
*Psychotherapy of Asthma. J. Loewenstein.—p. 994.
Attacks of Auricular Fibrillation. M. Riderer-Kleemann.—p. 997.
Shortening the Nose. E. Eitner.—p. 999.
Roentgen Therapy in Tuberculosis with Exophthalmic Goiter and Amenorrhea. E. Zweifel and Moatschinin.—p. 999.
Purpura with Wheal Formation. I. Werner.—p. 1001.
*Physical Chemistry of Thrombosis. H. Schulte.—p. 1003.
Survey of Pathology. S. Gräff.—p. 1009.
Indications for Treatment of Inflammatory Genital Processes and Peritonitis. W. Benthin. Supplement.—p. 75-98.

Adhesive Pleurisy, Tuberculosis and Pneumonia.—Koopmann found adhesions in the pleura in 1,408 out of 3,041 necropsies (46.3 per cent). The relation to pulmonary tuberculosis, except to the primary lesions, is frequent. Extensive adhesions of the lower lobes are usually due to pneumonia or other inflammatory processes. He confirms Walz' observations on the predisposition of such lungs to pneumonia infection, as well as to mortality from it. The unexpected deaths in pneumonia occurred, as a rule, in patients with adhesive pleurisy.

Shock Treatment in Gastric Ulcer.—Grömer confirms the good results of parenteral protein treatment in fifty-two patients with ulcers of the stomach, duodenum or jejunum. The pains subsided and the roentgen examinations also showed an improvement.

Psychotherapy of Asthma.—Loewenstein emphasizes the value of psychotherapy in about two thirds of asthma patients.

Physical Chemistry of Thrombosis.—Schulte discusses the significance of agglutination of blood platelets for thrombosis. It occurs in an isotonic solution free from colloids with a p_H of 4.3-3.5.

Monatsschrift für Kinderheilkunde, Leipzig

32: 289-384 (June) 1926

*Meningitic Form of Encephalitis. F. Glaser.—p. 289.
Psychology and Pedagogics. W. Eliasberg.—p. 308.
Encephalitis in Children. B. Kemkes and S. Saenger.—p. 334.
Spontaneous Correction of Rachitic Curvatures. L. Frosch.—p. 353.
*Diabetes in Children. A. Heimann-Trosien and H. Hirsch-Kauffmann.—p. 357.
*Fat-Free Human Milk in Decomposition. P. Dorholt.—p. 366.

Meningitic Form of Encephalitis.—Glaser observed five cases of prolonged sleep, convulsions and other meningeal irritation symptoms in children during the epidemic of influenza and encephalitis. Three of the patients recovered completely; one kept some nervous symptoms. The impairment of the brain functioning persists in one.

Light Form of Diabetes in Children.—Heimann-Trosien and Hirsch-Kauffmann observed a few cases. Insulin was not indicated directly, but such children thrived better on a more liberal allowance of food made possible by insulin. As little as 10 units daily may sometimes produce good results.

Fat-Free Human Milk in Decomposition.—Dörholt records fine results in grave atrophy of infants, especially in vomiting and diarrhea, with centrifuged human milk. Sometimes it is sufficient to mix an equal part of milk, from which the fat has been removed by centrifugation, with full human milk.

Münchener medizinische Wochenschrift, Munich

73: 1057-1100 (June 25) 1926

The Reichs-Gesundheitsamt. W. Rimpau.—p. 1057.
*Pain and Blood Pressure. P. Martini and F. Graf.—p. 1060.
*Contraindications to Vaccination. A. Groth.—p. 1062.
*Ulcerative Colitis. J. P. zum Busch.—p. 1065.
Iodine Determination in Urine. A. Narath.—p. 1066.
*Plaster Casts. A. Ritschl.—p. 1067.
Congenital Clubfoot. A. Preetorius.—p. 1069.
Percussion. J. Schwarzmann.—p. 1069.
*Hygiene of Every-Day Life. E. Friedberger.—p. 1069. C'cn.
Balneotherapy. H. Weskott.—p. 1073.
The Stump in Appendectomy. B. Köhler.—p. 1076.
Double Ureter. P. Seeliger.—p. 1078.

*Culture of Rous Sarcoma. A. Fischer.—p. 1079.
Infants' Nurses. W. Birk.—p. 1080.
Physiologic Chemistry in Germany. D. Ackermann.—p. 1081.

Pain and Blood Pressure.—Martini and Graf measured the blood pressure during various manipulations of dentists. With normal subjects, the blood pressure increases as a rule in proportion to the pain. With painless interventions, the blood pressure does not change except with nervous patients. Subjects suffering from hypertension react with a further increase in blood pressure even if there is no pain. This rise may endanger life.

Contraindications to Vaccination.—Groth regards eczema and intertrigo as strict contraindications until completely healed. An exception may be made only during an epidemic. Diffuse eczema of the face and skull is especially dangerous. Grave rickets, spasmophilia, tuberculosis and syphilis are other contraindications. Nephritis and bronchial asthma might also be aggravated by a smallpox vaccination.

Ulcerative Colitis.—The absence of tenesmus usually differentiates, according to zum Busch, ulcerous colitis from dysentery. Grave hiccup is frequent; the prognosis in untreated cases is bad—50 per cent mortality. He recommends an early appendicostomy which serves for lavage of the colon. A cecal fistula or artificial anus are other alternatives.

Plaster Casts.—Ritschl investigated the qualities of the material used for plaster-of-Paris casts. The bandage is frequently too weak or too tightly rolled. In the latter case the bandage has to be kept in water for several minutes before the inner parts are moistened. Such a bandage is of little use, since the outer layers become hard before the inner ones are ready for application.

Hygiene of Every-Day Life.—Friedberger took his meals sometimes at noon, sometimes three or four hours later, in a cheap restaurant. He observed that the well known feeling of disgust against restaurant food occurred regularly on the days when he took his meals late. Although the portions in the late meals were rather larger than in the early meals, he became hungry very soon afterward. The only qualitative difference between the meals was due to the fact that the whole meal is cooked at the same time in a restaurant and kept warm. Consequently, those who come late, get food which has been cooked too long. He decided to investigate the problem on several series of young and older rats, ordering the food at different hours from the same restaurant or cooking it longer. The rats fed with food which had been cooked less, gained much more in weight than rats fed with larger quantities of overcooked food. The latter were always hungry, but did not thrive. Raw food proved the best of all. The destruction of vitamins does not account for the results. He concludes that some unknown changes in the constitution of the food lower the food value of long cooked dishes, even if they do not change their caloric value. This is not disproved by the fact that animals as well as children eat spontaneously more of cooked food than of raw products. The appetite is due only to the facts that the former food is more palatable and not so valuable. Besides this, children as well as animals enjoy additions of raw food to the diet instinctively.

Culture of Rous Sarcoma.—Fischer has cultured in vitro Rous chicken sarcoma so far for two and a half years (since Oct. 31, 1923) in almost 400 passages. The tumor is still as virulent as before.

Seuchenbekämpfung, Vienna

3: 79-176, 1926

*The Inclusion Diseases. B. Lipschütz.—p. 79.
*Local Vaccination. A. Besredka.—p. 96.
Mechanism of Immunization of the Intestines. D. Zabolotny.—p. 110.
The Lipoid Binding Reaction in Epidemiology. E. Meinicke.—p. 131.
Relations Between Blood Groups and Infections. T. Mironescu and G. Stefanoy.—p. 138.
Vaccination Against Anthrax. K. Hruška.—p. 140.
Epizootics in South America. R. Kraus.—p. 145.

The Diseases with Cell Inclusions.—Lipschütz presents arguments to show that the inclusions are not living beings and consequently have no causal significance. He explains them as the reaction of a susceptible cell to a special virus. It occurs regularly, and on a large scale; the inclusions are proportionally large, forming a clump containing large numbers of the actual causal micro-organism, often a parasitism of the cell nucleus. He urges further research on the phenomenon instead of seeking to explain it at present.

Local Vaccination.—Besredka regrets that the bacteriologists decry his conception of local immunization without antibodies. Until recently, there was only one example of local immunity known, namely, the immunity entailed by abrin: After the healing of an ulcer induced by abrin, it is impossible to induce a second ulcer with it in the same region. The tissues have been rendered immune. A single anthrax bacillus on the skin may kill a guinea-pig, while a thousandfold of the lethal dose can be introduced elsewhere into the body without any reaction. But the animal is not rendered immune thereby; its skin is still susceptible. Animals vaccinated by way of the skin against anthrax, and thus rendered immune, have no antibodies in their blood. Anthrax has ravaged the horses and mules in the French army in the Near East in the last five years, but of the 8,912 animals vaccinated in the skin in 1924, only 0.45 per thousand have died, while with other methods of vaccination, 8.1 died. In Morocco, 21,640 cattle, sheep, pigs and horses have been vaccinated. In dysentery and the typhoid group, the susceptible tissue is in the digestive tract, and experience is confirming the value of vaccination by way of the mouth in these diseases. With streptococcus and staphylococcus processes, a curative action is more certain and more effectual when the vaccine against them is injected into the skin, instead of subcutaneously. It acts even when applied to the surface of the skin. The same action is apparent also when a filtrate of the vaccine—excluding the coccus bodies—is used. He calls this filtrate the antivirus. It is not an antigen although it induces immunity. It accomplishes this by checking the development of the germs in the infectious focus and by strengthening the resisting forces of the surrounding healthy cells, thus reducing their susceptibility to the virus. It thus finds no further foothold, while the local application of the antivirus chokes out the virus in the focus. The pain of a furuncle, for instance, is relieved in an hour at most and often in a few minutes after application of the antivirus compress. The special micro-organism involved has to be determined as the first step. He reiterates in conclusion: "Local infection = local vaccination: Every pathogenic micro-organism has its predetermined cell affinity; each cell has its predetermined immunity."

Zeitschrift für die ges. exp. Medizin, Berlin

50: 1-296, 1926. Dedicated to Hering. Partial Index

*Certain Factors in Earliest Development. E. Thomas.—p. 1.
The Infectiousness of Bacteria. O. Bail.—p. 11.
Endogenous Reinfection in Tuberculosis in Man. A. Ghon.—p. 26.
Constitution of Glycogen and Diabetes. A. Gottschalk.—p. 42.
The Physiology of Lung Tissue. L. Aschoff.—p. 52.
Experimental Inflammation of Heart Valves. A. Dietrich.—p. 85.
Supraventricular Extra-Systoles in the New-Born. J. Rihl.—p. 93.
A Case of "Swallowing Tachycardia." Sakai and Mori.—p. 106.
Auricular Fibrillation After Electric Trauma. R. Jaksch-Wartenhorst and J. Rihl.—p. 110.
Sympathectomy and the Cardiac Vagus. Dittler and Müller.—p. 166
Angiostomy. H. F. O. Haberland.—p. 180.
Proteins of Blood Serum After Venesection. Lindlau et al.—p. 191.
Blood Pressure and Excretion of Urine. Wiechmann and Paal.—p. 197.
*Carotid-Sinus Pressure Test in Surgery. Budde.—p. 207.
Survival Experiments on Severed Head. Wüllenweber and Koch.—p. 212.
*Glycemic Reaction and Gastric Motility in Circulatory Incompetence. B. Kisch.—p. 218.
Blood Stasis and Electric Currents in the Nerve. Koch.—p. 238.
Electric Irritability Tests in Man. U. Ebbecke.—p. 258.
Isolated Muscle Spasms in Rhythm of Heart Beat. E. Schott.—p. 263.
Motor Function After Severing of Posterior Roots. F. Hartmann and W. Trendelenburg.—p. 280.

Certain Factors on Which the Earliest Development Depends.—Congenital anomalies of the endocrine organs are not responsible for associated disturbances of development, since the endocrine glands do not normally function before birth. A common cause for the two is to be assumed. Thomas points out the peculiar fact that this common cause is often found to associate organs, such as the brain and the thyroid or pituitary, the functional connection of which is a matter of future development.

Fall of Blood Pressure on Operation Around Carotid Bifurcation.—In three operations, on two patients, for removal of cervical lymph nodes, the first under local, the two others under general anesthesia, Budde confirmed Enderlen's observation of a fall in blood pressure on exposure of the carotid. In the first case it dropped from 133 to 60 in seventeen minutes, during manipulations around the bifurcation of the artery. He counsels that work at this spot should be avoided. Prophylacic ligation of the external carotid should be carried out distal to the branching off of the upper thyroid artery. If for any reason the blood pressure falls suddenly during an operation on the neck, it might be made to rise by section of the sinus nerve.

Glycemic Reaction and Gastric Motility in Circulatory Incompetence.—In observations on patients and experiments on animals Kisch found that the change in tonus of the autonomic nervous system in patients with circulatory incompetence, which increases the speed of the heart's action, slows down the motility of the stomach and intestine. By the resultant delayed absorption of food, he explains the alteration in the glycemic curve, which in these patients rises and falls more gradually than in the normal person and does not reach so great a height.

Zentralblatt für Chirurgie, Leipzig

53: 1489-1552 (June 12) 1926

Standards in Statistics of Breast Carcinoma. O. Jüngling.—p. 1490.
*Ulcer Recurrence After Billroth I. H. Börger.—p. 1499.
*Diagnosis of Necrosis of Pancreas. E. Unger and H. Heuss.—p. 1500.
Flexion Contracture of the Finger. W. Reich.—p. 1503.
Sterilizing Adhesive Plaster on Wire Gauze. Engelbrecht.—p. 1504.
Dislocation of Patella Complicated by Torsion. E. Orsós.—p. 1506.
Exposure of the Articulation of the Jaw. K. Mermingas.—p. 1510.
Complications of Billroth I. F. S. Korganowa Müller.—p. 1511.

Recurrence of Ulcer After Billroth I.—In Börger's case an ulcer of the pylorus, resected by Kocher's modification of Billroth I, recurred at the junction of stomach and duodenum six months after the operation.

Early Diagnosis of Acute Necrosis of the Pancreas.—Unger and Heuss employ Wohlgemuth's test to determine the amount of diastatic enzyme in the urine in all cases in which necrosis of the pancreas comes in question. They have found that a positive response always indicates a pathologic condition in the pancreas, but since it does not show the severity of the lesion, it is not of itself sufficient ground for operation.

Klinicheskaya Meditsina, Moscow

4: 125-164 (April) 1926. Partial Index

Surgical Treatment of Empyema. A. P. Krimoff.—p. 125.
Clinical Aspect of Parametritis and Perimetritis. A. P. Gubareff.—p. 130.
Heredity of Cancer. S. P. Zelkin.—p. 136.
Surface Tension and Erythrocyte Sedimentation. A. S. Solovtsova.—p. 139.
*Leukocyte Picture in Bronchial Asthma. E. V. Loshkareva.—p. 141.
*Retraction of the Blood Clot. Levit and Shulman.—p. 146.
*Crystals of Cerebrospinal Fluid. A. I. Zlatoveroff.—p. 154.

Leukocytes in Bronchial Asthma.—Loshkareva noted a decreased number of neutrophils in the blood of thirty-two patients with bronchial asthma, outside of the paroxysms. There were no specific changes of the leukocytes. The number of eosinophils and lymphocytes increased outside the paroxysms, and decreased during them. Eosinophilia was more frequent in the blood than in the sputum. There did not seem to be any relation between the changes of the eosinophilia in the blood and in the sputum. No parallelism was manifest between the decline of the eosinophilia and the rise of temperature.

The Blood Platelets and Clot Retraction Index.—Levit and Shulman describe the method which they use for estimation of the quantitative relation between the amount of serum after clotting and the number of blood platelets. The proportion between the volume of the serum expressed and the original volume of the blood they call the "retraction index." Research was made on seventy-six patients, including some with pernicious anemia or thrombopenic purpura. No parallelism was manifest between the number of blood platelets and the retraction index. Evidently the platelets are not alone responsible for retraction of the blood clot. The phenomenon of retraction may be absent in small tubes, but occur in larger tubes. It may not occur in a horizontal tube, and may become manifest if the same tube is inclined. Others have found that the blood clot from a vein may retract well, while in blood from a finger of the same person, retraction may not occur. The properties of the walls of the tube may also influence retraction of the blood clot.

The Crystals of the Cerebrospinal Fluid.—Zlatoveroff examined the cerebrospinal fluid of eighty-one persons with disease of the nervous system, including 30 per cent with gout. The crystals found in the dried residue of the fluid proved to be composed exclusively of sodium chloride. No oxalic acid compounds were ever detected in the fluid.

Venerologia i Dermatologia, Moscow

213-367 (April) 1926. Partial Index

Bismuth Therapy of Syphilis. N. G. Osipiants.—p. 219.
Malignant Syphilis. I. S. Berakh.—p. 225.
Primary Syphilis of the Eye. B. B. Geft.—p. 229.
Impetigo and Its Treatment. G. I. Meshtshersky.—p. 234.
*Own Blood Transfusions in Eczema. Lintvareff and Hamburg.—p. 240.
Classification of Gonorrheal Arthritis. P. F. Timofeieff.—p. 259.
*Complement Fixation Tests in Gonorrhea. S. M. Yaskolko.—p. 274.

Autohemotherapy of Eczema.—The blood withdrawn was treated with sodium citrate solution; then the erythrocytes were washed, and injected in the same patient—all the erythrocytes from 5-6 cc. of blood. The injections were given two or three days apart; they were made in several places, in order to avert hemolysis of the erythrocytes, possible in a large hematoma. The smallest amount of the blood used for one transfusion was 5 or 6 cc.; the largest, 20 or 25 cc. There was no general or local reaction. Four patients with acute or chronic weeping eczema were definitely cured after eight or ten injections of the centrifugated erythrocytes, without any local treatment. In two patients with a dry eczema, the auto-erythrocyte treatment failed. It is probable that the amount of toxins in the blood is considerably less in the dry than in moist eczema. Therefore the erythrocytes introduced may fail to enhance the formation of specific antibodies in the subcutaneous cellular tissue. The authors report brilliant results in the acute weeping form and in chronic forms with exacerbations.

Fixation of Complement Test in Gonorrhea of the Male.—Yaskolko made tests with 502 serums from patients with acute or chronic gonorrheal urethritis. There was evidence that the intensity of the reaction depends on the clinical course of the gonococcal infection. The largest number of positive tests (81 per cent) was observed in cases with acute complications. The test was negative in nongonorrheal affections, as well as in the serum from healthy persons. The Bordet-Gengou test seems to be an indispensable clinical method for the prognosis of gonorrhea.

Mededeel. v. d. Dienst. d. Volksgezondheid, Batavia

163-277, 1926. English Edition

*Iron in Organs in Tropical Conditions. A. J. F. Oudendal.—p. 163.
*Blood Hemoglobin and Iron in the Tropics. H. Mengert-Presser.—p. 240.
*Blood Iron in Different Races. W. F. Donath.—p. 261.

Iron Percentage in Blood and Organs in Tropical Conditions.—This entire issue is devoted to the technic applied and the results of chemical and histochemical study of the iron in the liver, spleen, kidneys and blood of Europeans and natives in the Netherlands East Indies. The reports are profusely illustrated, and the results tabulated. The kidneys in the natives and Chinese showed excretion of iron. The liver and the spleen have an important share in the metabolism of iron in the tropics. In many of the 266 cadavers studied in detail, the abundance of iron in the liver, spleen and kidneys is said to have been "really astonishing." In one cadaver the liver and spleen together contained nearly 2 Gm. of iron (1,865 mg.). Oudendal queries whether this excessive hemosiderosis in the tropics is due to the tropical sunlight. The hemoglobin precentage was constantly high, both in natives and European residents.

Nederlandsch Maandschrift v. Geneeskunde, Leyden

13: *407-492, 1926*

*Etiology of Mongolism. W. M. van der Scheer.—p. 407.
*Influenzal Versus Epidemic Encephalitis. Cornelia de Lange.—p. 445.
*Spastic Colitis. J. H. G. Carstens.—p. 453.
*Anemia in Children. A. van Westrienen.—p. 458.
*Subcutaneous Injection of Blood in Children. Rookmaker.—p. 481.
*Congenital Atrophy of Abdominal Muscles. J. H. G. Carstens.—p. 483.

Etiology of Mongoloid Idiocy.—Van der Scheer presents data from 350 families in which a child with mongoloid idiocy was born. Over 60 per cent of these children were not only the last born, but there had been an unusually long interval since the birth of the preceding child. A large proportion of the mothers were over 40 years of age. Other malformations or deformities in the other children, abortions and stillbirths were comparatively frequent in the mongoloid idiocy families. In only twelve of the 338 mongoloid families were other children feebleminded, and in seven of these families the other mentally deficient child presented the mongoloid type also. This proportion of only twelve in 338 families testifies that the usual causes, syphilis, alcoholism, consanguineous marriages and hereditary factors cannot be incriminated for the mongoloidism. Studying the subject thus from all these various standpoints, one fact becomes evident, namely, that some special factor is involved, and that this must be sought in the mother, and in her uterus. Some local anomaly in the mucous membrane is responsible for some anomaly in the amnion, and mongoloidism is the result.

Influenzal Versus Epidemic Encephalitis.—De Lange analyzes three cases of encephalitis in children, aged 6 weeks to 3 years. The disease ran a febrile, acutely fatal course in all, and necropsy in one confirmed the hemorrhagic, nonpurulent influenzal encephalitis although the clinical course and especially the blood findings had suggested the epidemic type. Acute epidemic encephalitis usually begins with subfebrile or afebrile temperature. Transient facialis paralysis suggested the epidemic form, as also the lack of shifting to the left and of toxic granules in the blood. The peroxydase reaction in the blood was positive in all three. In this connection she cites Sato's asertion that a striatal lesion inhibits the peroxydase reaction, and thus renders possible the localization of a lesion in the brain by mere staining of the blood smear. In the case examined post mortem, the base of the brain seemed to be normal except for hyperemia.

Spastic Colitis.—Carstens has encountered several cases of colitis in which children presented sudden attacks of intense pain in the abdomen, so severe that perforation or calculus colic was assumed at first. In one child the intervals were six months to a year, but in one boy, aged 7, they recurred six to eight times a day, lasting up to a minute. The pain is not located at the point of the spasm, where the contraction of the bowel could be sometimes palpated—another instance of the "caprices of the abdominal brain." Under regulation of the diet the colitis was cured. A set of roentgeonograms show the contrast substance during and between the spasms.

Treatment of Anemia in Children.—Westrienen says that operative treatment seems to be gaining ground. He reports a case of anemia slowly progressing from the first to the thirteenth year, absolutely rebellious to all medical measures. The boy's spleen reached 4 finger-breadths below the costal arch; the hemoglobin percentage was 20; the urobilin content high in urine, serum and stools; the acidity of the gastric juice, 30. The spleen was then removed. The immediate effect was slight and the progressive improvement did not begin for a few months, but then continued, and the boy has been in good health since. He also reports fair results with subcutaneous injections of 20-30 cc. of blood in very young infants. Better results were obtained with iron and abstention from milk, even when the anemia was not of alimentary origin; he describes two successful cases of this kind in older infants.

Subcutaneous Injection of Blood in Anemia in Children.—Rookmaker states that the hemoglobin percentage averaged 36 in thirty-nine children treated with the usual measures, and it increased to 55 in a little over five weeks. In another group of seven, treated in the same way except for supplementary subcutaneous injections of blood, the corresponding hemoglobin figures were 27 before and 60 after the course. Blood grouping is not necessary with this subcutaneous technic. One injection a week is the custom, and except for a slight rise in temperature on the following day, and a diarrhea in one case, no by-effects were observed. He uses blood from one of the family, drawing it into a 30 cc. syringe already containing 3 cc. of a 3 per cent solution of sodium citrate.

Congenital Atrophy of the Abdominal Muscles with Hypertrophy of Urinary Apparatus.—A young male infant presented this anomaly; three large tumors could be palpated in the abdomen. Necropsy at the age of 5 months explained the tumors as the dilatation and extreme hypertrophy of the bladder, ureters and pelvis of both kidneys. A photograph of the urinary apparatus is reproduced, and the case is compared with fourteen on record. All were in boys. Only four have survived, one now aged 17.

Acta Ophthalmologica, Copenhagen

3: 303-376, 1926

Optic Images Produced by Oblique Refraction. H. Gertz.—p. 303.
Special Technic for Removal of Metal Scrap Deep in the Eye. S. Larsson.—p. 316.
Surgical Diathermy in Diseases of the Eye. S. Larsson.—p. 319.
**Myopia from the Point of View of Heredity.* E. Holm.—p. 335.
Bell's Phenomenon in Lagophthalmus. H. U. Møller.—p. 348.
Operation on the Eye Pictured on Gravestone. Johnsson.—p. 356.

Myopia from Heredity Standpoint.—Holm found direct transmission of reading myopia to be three times as frequent as the indirect among "well read" families, while the two were of equal frequency among families without higher education. He believes that hereditary factors are the same in reading myopia as in myopia not due to near work, and explains the more frequent occurrence of myopia in families addicted to reading, on the ground that near work will develop the condition in persons in whom, the hereditary factors being few, it would not have developed without external encouragement.

Hospitalstidende, Copenhagen

69: 533-564 (June 10) 1926

*Influence of Light on Oxygen Metabolism. C. Sonne.—p. 533. C'cn.—p. 565.
A Myxochondroma of the Femur. H. Amstrup.—p. 552.

Action of Light on Oxygen Metabolism.—Sonne describes extensive research with meal-worms, the larva of the *tenebrio*. Exposure to the mercury quartz lamp showed a marked *increase in the oxygen metabolism* when the rays were filtered through a solution of methylene blue. In one application of an hour's duration, the increase amounted to 17.3 per cent.

69: 589-612 (June 24) 1926

*Teratoma in Girl Aged 11. H. K Lassen.—p. 593.

Teratoma in Girl.—The compact teratoma weighed 10 Kg. and was safely removed under local anesthesia. The pedicle was on the left ovary, and the patient, a girl aged 11, made a smooth recovery. Lassen reviews the literature on teratomas, commenting on the rapid growth when they start to grow. In the case here described, the tumor had been noted for only six months.

Hygiea, Stockholm

88: 465-512 (June 30) 1926

*The Barospirator. T. Thunberg.—p. 465.
Blood Grouping in Laplanders. E. D. Schött.—p. 480.

Apparatus for Artificial Respiration Not Acting on the Lungs Directly.—Thunberg describes his barospirator which is constructed on the principle of rhythmic variations in the pressure of the air being used to ventilate the lungs—not acting on the lungs themselves. These remain passive, the air flowing in and out under the force of the pressure outside, the patient reclining in a small closed respiratory chamber which holds him comfortably.

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MEDICAL TREATMENT OF CHRONIC NONSPECIFIC INFECTIONS OF LUNGS AND BRONCHI IN CHILDREN[*]

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[EDITORIAL NOTE.—This paper, together with the paper by Dr. Graham, which follows it, concludes the symposium on "Chronic Nonspecific Infections of the Lungs and Bronchi." The last issue of THE JOURNAL contained the papers by Dr. Jackson, Dr. Morse and Dr. Mullin.]

The medical treatment of chronic nonspecific infections of the lungs and bronchi in children is a topic that admits of individual interpretation and requires definition. Under "chronic nonspecific infections of the lungs and bronchi" I shall include chronic bronchitis, together with recurrent bronchitis, both simple and asthmatic; unresolved pneumonia; lung abscess, bronchiectasis, and certain types of massive collapse of the lung; and chronic empyema. Under "medical" treatment I shall include not only such measures as I, a nonsurgical man, would suggest in the treatment of chronic nonspecific infections of the lungs and bronchi; but also such advise as I, a medical man, might give with reference to seeking help from others, such as the surgeon, the bronchoscopist and the otolaryngologist. The pediatrician is a general practitioner to the young, and it is a part of his therapy to decide when, and when not, to consult with, or to refer a given case in toto, to a colleague in another specialty. In this way I shall hope in a general way to indicate a pediatrician's attitude toward the various medical and surgical procedures that seem indicated in these cases.

In discussing the medical treatment of these chronic conditions it would seem best to consider first some general measures more or less applicable to all of them; and, secondly, such measures as would seem indicated in each condition individually.

Of the general measures, three stand out as of paramount value: rest, hygiene, nutrition; behind them comes a lame fourth, drugs. This sounds trite and bromidic as a textbook; and yet these fundamental things have a pediatric aspect that lifts them out of the commonplace and gives them a real interest and a specific importance in this connection. Rest, hygiene, nutrition, have long been recognized as the important triad in the treatment of tuberculosis, in which long and intensive observation has sharply defined and unified our ideas. The nonspecific infections here under discussion are so similar to the chronic specific infection of tuberculosis that the same general treatment would seem indicated in the two.

REST

The first and, to my mind, greatest of all indications is rest. In the earlier days of climatic treatment of tuberculosis untold thousands died bathed in the sunshine and pure air of the ideal climate of the West and Southwest, because they did not know that rest was more fundamental than pure air and sunshine. In these nonspecific infections, rest is equally fundamental. The two imperative indications for rest are fever; and weakness, or fatigue. No matter what the condition, the child with fever belongs in bed. The higher afternoon temperature of the patient with fever and especially of the patient who is up and about should alone convince us that activity increases fever, and increases it in proportion to the degree of activity. Fever robs the child of appetite, hastens his metabolism, prevents a gain in weight, depresses him, and takes away from him that normal cheerful and happy childish outlook that is essential to convalescence.

The child that is tired and weak belongs in bed. Fatigue is incompatible with appetite and a normal gain and normal spirits. There is no more erroneous idea, and none unfortunately more common, that that the fatigued and weakened child gets weaker in bed and stronger from being up and about. As well expect the jaded horse to get strong from continuing the load. Our wards for cardiac and tuberculous patients show us in striking ways the beneficient effects of rest in bed in the hospital as compared with activity in the home.

There is a further consideration in pulmonary conditions that the tuberculotherapist has long recognized. Inflamations heal when at rest, and become aggravated by motion. Artificial pneumothorax, the cast on the inflamed joint, traction on the tuberculous hip, all recognize this principle. The lung, at best, cannot be put at complete rest; we must breathe. It can, however, be spared unnecessary activity by complete bodily rest. Activity increases the rate and depth of respiration, and so traumatizes the inflamed lungs and bronchi. Coughs are aggravated by activity, as we well know, and in many irritative, nonproductive coughs the mere act of coughing is a non-negligible trauma that in itself increases the cough.

By rest in bed I do not mean the current midday rest period; I mean absolute rest *in bed*, when it is indicated in any of these conditions. There is still a common idea that the rest cure cannot be carried out with children. The experienced pediatrician knows that it can. It requires, however, a technic that is distinctly pediatric. If the child is to be kept in bed, he must not be allowed to leave it for any purpose except to have his bed made or to have his room aired. Partial bed rest leads to teasing, to yielding, and to a resulting lack of an unquestioned discipline that is essential to carrying out this procedure. It is a common observation that the child that is allowed to go to the toilet will develop startling superficial symptoms of diabetes. Under favorable conditions nearly every child can be made to acquire the bed habit as the natural one. The perfect contentment and cheerful acquiescence that prevails in the cardiac and orthopedic wards is eloquent proof of this. In some homes the calm and resourceful mother can accomplish this, if she has been adequately convinced of its necessity. If she cannot, and many cannot, then the therapeutic expedient of the stranger as caretaker, with an absent mother, must be called on. If this is not enough, then the strange nurse in a strange environment will practically always do it. The answer is the private room and the special nurse for the well-to-do; the ward for those unable to meet the expense. he child will rest and eat for the stranger in the ange environment and will get fat, if humanly posible; and, if he gains in weight, the underlying pathologic condition can often safely be ignored. I have especially stressed complete rest in bed because in the child there is commonly no intermediate ground, especially in the home, between complete rest and nearly full activity. The child is not merely a little man—he is a child and has a psychology all his own. If there is to be any considerable degree of rest, it must be complete.

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[*] Read before the Section on Diseases of Children at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[*] On account of lack of space, this article is abbreviated in THE JOURNAL by the omission of two halftone illustrations. The complete article appears in the Transactions of the Section and in the author's reprints.

HYGIENE

The second indication is proper hygiene. Most of the conditions that we are considering are largely the product of the temperate zone winter. They do not arise to an appreciable extent in the summertime and abate with the approach of warm weather. The answer is evident. The child with such conditions is better off in a warm, equable, sunshiny climate in a nonpopulous locality. Not all children can afford a change of climate, and pathologic exigencies may preclude it. The conditions must then be met at home. If so, what are the available and most beneficial ingredients of proper hygiene? The emphasis was once on pure, fresh air. Just now we are inundated with ultraviolet rays. That ultraviolet rays from the sun or from a quartz or carbon arc lamp, or those bottled up in their cheaper and more accessible congener, cod liver oil, will prevent and cure rickets, we know. We have furthermore good reason to believe that this therapeutic result is only part of a favorable influence on the general metabolism of the child. There seems also no doubt of their value in certain types of tuberculosis. That sunlight and other forms of radiant energy are helpful in the class of cases under discussion seems reasonable and is supported by clinical testimony. That there is, however, something about fresh air, outdoor air, air not in a room, seems indisputable. Again, our tuberculotherapist has long known and utilized this fact. The tuberculous patient dreads the indoor nights. The modern outdoor sleeping porch is not a mere fad, a mere psychic reaction, as those who are its devotees tell us so enthusiastically, and sleeping porches are used only at night when the sun is not in evidence. The camper knows the difference and feels oppressed and unrefreshed when he again sleeps in a room, even if well ventilated. I learned, too, thirty years ago in Colorado that one practically never caught a cold when camping out, and that a cold was a regular sequence to a return to living indoors, and the prevention of colds is a prime factor in all of these conditions.

It can hardly be doubted, in this connection, that our national institution of dry, overheated rooms, in spite of materially warmer winter clothing, is a fundamental factor in heightening susceptibility to those acute upper respiratory tract infections that are so clearly the initial stage of these chronic infections. The transition from a sweltering indoor atmosphere of 80 to an outdoor temperature of 10 cannot be made, habitually, with impunity. That minimal clothing is not detrimental, in this respect at least, would seem to be borne out by the fact that women are not more, if they are not indeed less, prone to these infections at the present time than are men, who serve admirably as an equal number of experimental controls. Perhaps the saving grace lies in the fur coat that makes the whole procedure rational.

Ultraviolet ray therapy can be used in any climate or season. If the sun is not out or cannot get through the pall of smoke and dust, the lamp can be used. It is still, however, in the panaceal stage and still rests more on testimonial than on scientifically established evidence in this type of case. Suitable fresh air is not so easily obtainable in the temperate zone winter. Fortunately, the cold air fad for all kinds of pneumonias and bronchial troubles has about run its course. Cold air is not good for inflamed bronchi, and rarely so for cough from any source. When warm days are not frequent, one must have recourse to changing the child from one room to another, airing the one not in use. A fireplace and an electric heater are useful adjuncts, especially the former.

Cod liver oil, which may well be considered under hygiene instead of under medicinal or nutritional therapy, has long enjoyed a unique reputation in the prevention and treatment of all chronic and recurrent pulmonary conditions. In spite of its present well nigh universal use in infancy and even later, its effect in this respect is hard to estimate. It is certainly far from specific, and respiratory tract infections seem constantly on the increase in spite of its use.

NUTRITION

The problem of nutrition is an important one and is intimately interwoven with the other indications. It is commonly not so much a question of good food as of conditions that will make the child eat. Rest in bed will often do more than anything else to bring back an appetite. Fresh air and sunshine are next in importance. Tonics do little good in themselves. Occasionlly, iron seems to help. Coaxing or forcing a child into eating has nearly always an effect opposite to that intended. He is not merely a hopper, but an individual with a psychology. A judiciously feigned indifference to whether he eats or not is commonly far more effective, especially when combined with a strange environment and an absent mother. In selected cases, a dollar a pound is an excellent investment. The nature of the food is hardly as important as the quantity. If the child will only eat a fairly well balanced diet, and plenty of it, the food elements, the calories and the vitamins can go hang. A great deal of emphasis has been laid in recent times on milk, chiefly based on animal experimentation. The slogan so dear to the milk producers, to the lay dietitians, and to some laboratory workers, "Drink more milk—a quart or more a day" was not invented by a clinician, and certainly not by a pediatrician. If the child likes milk and a quart a day will not interfere with his appetite and comfort, there is of course no objection to it. But if he will eat more if he drinks less, so much the better, and we will lose no sleep over xerophthalmia or beriberi or any other less tangible evidence of vitamin deficiency.

DRUGS

The question of medicinal treatment in these chronic infections is interesting perhaps more from a negative than from a positive standpoint. There is still prevalent an idea, apparently not wholly restricted to the laity, that the Almighty caused a certain number of diseases to appear on the earth and that somewhere there lies hidden a specific curative chemical agent to be sought and found for each of these diseases. Cough, the one symptom common to all these infections, and almost the only druggable one, has probably been more promiscuously and artistically drugged than any other in all the range of medicine. Only in recent times has there been a reaction, but even then much more in theory and in conviction than in practice. When I studied Osler, as a medical student, he was considered a sort of therapeutic nihilist, and many students invested in another current Practice of Medicine because it was "great on treatment." I recently got out my edition of Osler of 1898. Judged by present advanced ideas it seemed replete with pharmaceutic recommendations in the treatment of these conditions. It is interesting to turn to the final utterances on this subject of this master clinician, who was always a little ahead of his times. When Osler lay ill with his last illness, knowing that it was his last; when racked with paroxysms of cough due to most of the things we are here discussing; when his interest was pathetically real and personal, he wrote to a friend in his characteristically incisive manner: "There is nothing I do not know of the varieties and vagaries of cough and coughing. . . Shunt the whole pharmacopeia, except opium. It alone in some form does the job. What a comfort it has been." And again, a few days later to his former secretary: "I have been having a devil of a time—in bed six weeks! A paroxysmal bronchitis, not in either of your books! . . . Very strange attack. I am very comfortable except in my paroxysms. All bronchial therapy is futile—there is nothing my good doctors have not made me try, but the only thing of any service whatever in checking the cough has been opiates—a good drink out of the paregoric bottle, or a hypodermic of morphine." His nurse also tells us that he disliked mixtures very much, could hardly be induced to take them, and would say: "Why spoil a wonderful drug like opium by mixing it with inferior things?"

I think I may safely say that most of us are in fair accord with what has just been quoted, no matter what our practice. We probably all prescribe other drugs for these chronic coughs, and yet, which one is there whose beneficial effects do not rest, again, on pharmacologic and testimonial rather than on demonstrable clinical evidence? We are perhaps unfortunately still in a position with Falstaff, where "discretion is the better part of valor." Lay education must be by evolution, not revolution, and we can no more as yet wholly disregard the psychic than can the Christian scientist. The patient has a cough; something *must be done*; it always has been done; if we do not do it, some one else will. A simple, harmless cough syrup, and *in* our present stage of evolution it must be a "syrup," sets the whole family at rest whether it does any good or not. The present widespread use of a certain pharmaceutically well backed cough syrup that is very convenient because it just escapes the Harrison law is good evidence that our faith in our favorite combinations was not inviolable. In painful, distressing coughs, on the other hand, coughs that rack and cause dread and loss of sleep, no matter what the pathologic condition, we will wisely resort to some form of opium for its own real effect, and, if used at all, in dosage sufficient to bring about relief. This can be done all the more safely with children, because there is danger neither of habit formation nor of accessibility to the drug.

The indication for opium is not so much to cure the cough directly as to relieve the patient and give him rest. It is clearly not indicated as a routine measure just because there is a cough; and in certain productive, nondistressing coughs it is clearly contraindicated. It must not stand in the way of bronchial drainage by numbing the normal protective and beneficial cough reflex, unless there is a greater need for relief from distress and inability to sleep. In both the irritative, nonproductive coughs and in those with abundant discharge, steam inhalations impregnated with some soothing substance like compound tincture of benzoin and oil of eucalyptus, which have, moreover, a convincing aroma, would seem more rational, in the one case to soothe an inflamed mucous membrane and in the other to liquefy thickened secretions and to promote their expulsion. This can be done with the use of a tent or a cornucopia; or often better by saturating the room with the warm vapor. The source of heat should be an electric stove, preferably; or a kitchen stove; and very definitely not an alcoholic preparation that may contain wood alcohol.

The use of vaccines in the cure of these conditions would seem to be justfiably restricted to an ever narrowing field; and it would hardly seem appropriate in the present state of our knowledge, to dignify, by a discussion before a scientific body such as this, the prophylactic use of vaccines in the *prevention* of the underlying colds or grip.

INDIVIDUAL CHRONIC INFECTIONS

The discussion of the medical treatment of each individual chronic infection can be brief.

In chronic bronchitis, a relatively rare condition in children, all that has been said under general treatment is applicable. Chronic bronchitis must always be considered a symptom of something else, until that something else can be excluded. This is especially true of tuberculosis, as Dr. Morse has emphasized. A very important item here in the treatment is not to be led astray by an overenthusiastic and dogmatic roentgenologist who has a tuberculosis complex.

Inseparable from a consideration of chronic bronchitis is that of recurrent bronchitis both simple and asthmatic. In both, the primary aim is to prevent upper respiratory tract infections. Contact with those so infected should be avoided exactly as it is with the other contagious diseases. Sinus infections, which now have the spotlight, here may play an important part and should be looked after if one can find an interested and experienced otolaryngologist. Adenoids, too, if present to the extent of causing symptoms, should be removed at any age for reasons that I will assume to be obvious. In older children the recurrently inflamed tonsil should have the same treatment. In younger children, say up to 3 or even 4 years of age, removing the tonsils as a prophylactic measure against recurrent infections, and especially against recurrent and subacute bronchitis, is, in my experience, a very disappointing, if not, indeed, useless, procedure. One hears too often to dismiss it casually, the story that such infections are just as frequent as they were before and bronchitis a little more protracted after the tonsils are removed early. In the first two or even three years it is a rarity to find an isolated tonsillitis to which one could attribute an isolated rôle. All one can commonly say at this age is that the child has an inflamed throat and nasopharynx, and usually much more. In other words, we have an extensively inflamed mucous membrane including that which covers the tonsil; but the tonsil itself is not the atrium of infection nor does it bear the brunt of it as it may in later life. Especially is this true of those cases in which there are abnormally frequent infections, with bronchitis as a nearly constant symptom. Here it would seem fair to assume that we have an abnormally sensitive mucous membrane, sensitive to infection, to cold, to dust, to coddling, to drafts, to the absence of fresh air and sunshine, to changes of temperature, just as the skin in eczema is abnormally sensitive to much the same kind of external irritants. Very often the two are combined in what Czerny has called the exudative diathesis. To remove the tonsils in these cases in the first two or three years to prevent recurrent infections has much the same therapeutic value as removing a portion of the cheek for eczema. Overfeeding, especially with eggs, meat and milk should be avoided; and coddling, overheated rooms, and overwarm clothes, bad hygienic surroundings, and exposure to those with colds and grips, even much more so.

In many of these cases the cool bath, if well tolerated, and only then, seems to have a favorable prophylactic value. I know of no medicine that has the slighest effect, except, perhaps, cod liver oil.

All that has been said of recurrent simple bronchitis applies equally to the recurrent asthmatic type. If the evidence obtained from older children and adults were not so convincing that asthma is apparently nearly always, perhaps always, an allergic reaction, it would be hard for the pediatrician to believe it from his own experience, especially with babies and younger children. Certainly the vast majority of patients that have asthmatic symptoms at this age have them in association with and as a symptom of an upper respiratory tract infection. There are children, and especially babies, who have an asthmatic type of bronchitis with nearly every such infection, just as some children have spasmodic croup under the same conditions. That we have here to deal with a bacterial allergy is possible, perhaps even probable. And yet it has always seemed to me more inviting to think of the asthmatic condition in these cases as being due to a spasm of the bronchi, as croup is a spasm of the larynx, both a reaction to an adjacent inflammation of the mucous membrane and occurring only in susceptible persons. In both cases the susceptibility tends to cease after a few years. We know, too, that the younger the child with this type of asthmatic bronchitis, the more favorable the outlook for an early cessation and for the nonoccurrence of a chronic asthma of the adult type.

In the treatment of these cases, in addition to what has been said, especial emphasis should be laid on climatic treatment. A change during the winter months to a warm, equable, sunshiny climate, in a noncongested locality is of the greatest value. There is no serviceable substitute for it. If the attack itself is severe enough to warrant it, the hypodermic use of epinephrine is, as we know, almost specific in relieving the acute distress.

Some interesting observations have come recently from Chevalier Jackson's bronchoscopic clinic in relieving asthma by bronchoscopic cleansing and drainage of bronchi, together with bronchoscopic instillation of medicated solutions, and the simultaneous use of autogenous vaccines. The results reported would seem to warrant further trial, whatever they may be due to.

The asthmas of older children, or of any age, not associated with recurrent infections, do not belong in this discussion.

In unresolved pneumonia, whether of the lobar or the now more prevalent chronic bronchopneumonic type, we have nothing to offer except rest in bed, long and complete, if there are fever, cough and weakness; time; food; fresh air; quartz lamp treatment, especially for the rachitic baby; and eventually, if pathologic and financial conditions permit, a change to a warm, equable, sunshiny locality for the rest of the winter. Exposure to the roentgen ray has been recommended, but requires further observation to carry conviction.

In lung abscess there is little that the medical man can do except to carry out general supportive measures, rest, food, good air, sunshine and light exposure, together with postural treatment. The patient should lie on the unaffected side as much as possible if the abscess has broken through a bronchus; and on the affected side if it has been drained surgically. Inhalations may help in liquefying and promoting the expulsion of thickened pus and secretions. Artificial pneumothorax has been advocated in selected cases and tried to some extent, to help by pressure on the abscess cavity to empty it and so promote healing. Codeine or some other opiate may be used judiciously to relieve distressing cough.

BRONCHOSCOPIC AND SURGICAL HELP

The really important function of the medical man in the treatment of the lung abscess that he has diagnosed is to decide to whom to turn for help. We have found the surgeon reluctant and the bronchoscopist eager, and we think that is as it should be. We turn first to the bronchoscopist, or, rather, we go with the surgeon to the bronchoscopist. If the abscess has ruptured into a bronchus we turn the patient over to the bronchoscopist for bronchoscopic treatment. If there is no communication with a bronchus, we want the patient examined, and if indicated, treated, bronchoscopically first, and surgically only as a last resort. If the bronchoscopist finds an abscess pointing into a bronchus, he can at times drain it at this point.

I believe we shall find increasingly that the greatest and most frequent service that the bronchoscopist will render in this general type of cases, both acute and chronic, is not in the fully formed abscess, but in those cases of postoperative and foreign body, massive collapse of the lung, that often so closely simulate an abscess that they cannot be distinguished from it by the ordinary clinical and roentgenologic examination. My own conversion to this conviction in the matter of postoperative cases came from one case that was so illuminating that I feel warranted in telling about it even in Dr. Jackson's presence:

A little girl of 5 years came to us profoundly ill. Following a tonsillectomy five weeks previously, she developed a high fever that touched 104 and 105 F. daily, up to the time of admission. Clinical examination was indefinite, but the roentgen ray showed three sharply defined dense areas involving both lungs, varying in size from a golf ball to an orange. We all concurred in the diagnosis of multiple abscess. The surgeon rightly refused to operate under the circumstances, though the largest mass was peripheral and adherent to the parietal pleura. We waited ten days, hoping, with Micawber, that "something would turn up." The child remained much the same, gradually getting weaker and sicker. The masses did not grow much in size except one near the hilum that did (fig. 1). There was at times a very small amount of offensive expectoration. The surgeon suggested a bronchoscopic examination. It seemed to me a useless torture in a hopeless case, and I rather protested. With one bronchoscopic treatment, which was well borne, as all bronchoscopic treatments seem to be in skillful hands, Dr. McGinnis, our bronchoscopist, instituted free drainage by removal of excessively foul material from the bronchi on both sides, with improvement in twenty-four hours, miraculous improvement in a few days, and a complete clinical and roentgenologic cure in less than four weeks (fig. 2), with a gain of 5 pounds (2.3 Kg.). There was never more than a slight expectoration after the treatment, but the breath was the foulest I have ever known when the child coughed.

These dense masses, though potential abscesses, were evidently not yet true abscesses in that they had not frankly suppurated, although the high temperature had persisted over six weeks. Manifestly they were portions of the lungs to which the bronchi were plugged by aspirated blood, or shreds of tonsil, or adenoid; from which the air was absorbed, causing an atelectasis and a roentgen-ray shadow, and in which the secretions and foreign matter became infected and excessively foul. These cases seem exactly analogous to massive collapse of the lung due to the inhalation of any foreign body, such as have been reported in great and ever increasing numbers, especially from Dr. Jackson's clinic. The pathogenesis seems so clear in these cases that in every postoperative involvement of the lung, especially after tonsil and adenoid operations, the first indication in the treatment would seem to be to call in an experienced bronchoscopist to remove the plug, wash out the bronchi and institute free drainage.

If there is a real abscess that proves inaccessible to the bronchoscopist, and is accessible to the surgeon, then it is, of course, turned over to the latter.

In a case of chronic massive collapse of the lung, with a shadow involving a whole lung and containing the heart, which has become bacteriologically quiescent and cannot be relieved by the bronchoscopist, I know of nothing to do except to turn it over to the orthopedic surgeon as we would any other deformity, or threatened deformity, in any of these conditions, to try to prevent an otherwise inevitable extreme lateral scoliosis. We have one such case of unknown etiology that came to us in a chronic condition, and I wonder what is going to become of the patient.

Much that has been said about lung abscess applies equally to bronchiectasis. The medical man can only look after the general care of these cases, together with facilitating drainage and emptying the dilated bronchi, by appropriate posture and inhalations. Lying on the unaffected side causes freer expectoration in some cases. In many, one can cause a daily free evacuation of large amounts of pus by learning to hold the patient in a certain position, notably a nearly vertical position over the edge of the table or bed, head downward, with the affected side somewhat higher than the other. The bronchoscopist is again called in if these simple measures do not lead to a fair improvement. Better drainage through bronchoscopic cleansing of the affected areas and of the bronchi leading to them gives some relief to the patient, and at least a chance of permanent satisfactory improvement and even symptomatic cure. If this does not bring sufficient relief, we begin to think of the surgeon. While the condition is almost unbearable in a well developed case, often ostracizing the patient from his fellows and leading to grave mental depression, and while in many cases it is quite incurable by any other treatment, a medical man hesitates to resort to surgery. A lobectomy may be just a part of the day's work to a surgeon, but it seems rather heroic to a medical man. The parents too may hesitate when one explains to them a 40 per cent chance of death at the time, and only a 13 per cent chance of permanent cure. Still, in selected cases, when the condition is clearly restricted to one lobe, as shown most convincingly by a pneumonographic study, and is becoming unmitigated and intolerable, one would not delay too long to recommend surgical intervention. The surgeon will justly tell us that we wait too long. In the case that we finally turn over to him this is doubtless true, and yet he will probably find it in his heart in the present state of thoracic surgery to forgive us our delay. If the condition is a very extensive one, involving more than one lobe, and especially if bilateral, there will probably be complete agreement that the case is not a proper one for surgery.

Chronic nondraining empyema in the older child we consider frankly a surgical disease in which the medical man can only assist in the diagnosis and general treatment, and perhaps with a few preliminary aspirations in extreme cases. In the infant under 2 years of age, and especially under 1 year of age, and there is a very great difference between the two, when surgical intervention for some reason is still attended by a very much higher mortality than in older children, we still prefer to aspirate repeatedly in the fair hope that this alone will cure the condition, even if not all the pus is removed at the last aspiration. Our surgeons are in accord with this view. Having once witnessed a sudden death as the needle was pushed into the chest, and having good reason to know that the danger of puncturing the lung and producing a more serious pyopneumothorax is not a negligible one, I do not look on repeated aspiration as a simple, care-free, procedure, and yet in very young babies it is my experience that it is less dangerous as to life, and more hopeful as to cure, than is more radical surgery. In the event of a pyopneumothorax, of which we have had an unusually large number this spring, we usually turn them over at once to the surgeon, and decidedly so if the amount of free air increases to any considerable extent at any age. In chronic empyema that is draining, we can only help the surgeon, and ultimately the orthopedic surgeon, by the use of all the general measures already discussed.

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Gas Hazards Encountered by Every One.—Almost every individual in his daily life is subject to possible danger from asphyxiation, by fire or explosion due to one or more of the combustible gases used for the production of light, heat and power, declares the Bureau of Mines, Department of Commerce. . . . Gasoline fires and explosions are among the most common of present-day hazards. Only 1.5 per cent of gasoline vapor in air is sufficient to make an inflammable mixture. Air flowing over liquid gasoline and many crude oils readily becomes charged with enough hydrocarbon vapor to transmit flame on reaching some source of ignition such as a flame, an electrical spark, or short circuit. . . . Oxygen containers must be absolutely free from even traces of oil, organic matter, or in fact, any combustible substance. Compressed oxygen is a very dangerous substance. An oxygen cylinder containing no more than a film of oil on its inner surface is just as truly an explosive as nitroglycerin.

THE SURGICAL TREATMENT OF PULMONARY SUPPURATION IN CHILDREN *

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There is no particular treatment of pulmonary suppuration that will be equally satisfactory in all cases. It is unwise at present to attempt to standardize the treatment of these conditions. On the contrary, each case must be judged by itself, and the best results will be obtained if such cases are studied by a team consisting of a medical man experienced in this kind of work, a surgeon with equal experience, and a skilled bronchoscopist.

The method of treatment selected for a case of acute pulmonary abscess will depend largely on its location. There are, roughly, three main types of acute suppuration: those cases in which the lesion is chiefly about the hilum; those in which it is at the periphery of the lung, and, finally, the cases of multiple abscess. Any of these conditions may become chronic and may be associated with bronchiectasis. In children the frequency of the aspiration of foreign bodies into the lung makes it imperative to search carefully in every case for such a possibility. This has already been emphasized in the preceding paper of this symposium. Before treatment is begun, therefore, the diagnosis should include attempts to locate the suppuration to determine the presence of cavities, the presence of foreign bodies, and nature of the infection, with particular reference to the presence of tubercle bacilli or the spirochetes of Castellani, etc. For the location of the suppuration and the determination of cavities, ordinary physical and roentgen-ray examinations are often unsatisfactory. Lesions concealed behind the shadow of the heart and fluid levels in small cavities will often be made to appear in a striking manner if the patient is examined in a number of positions. It is remarkable how often this simple principle is neglected. Diagnostic pneumothorax is also of great value. Singer and I[1] recently discussed these features in another paper. The bronchoscope, in the hands of an expert, will often reveal this information positively, and the newer method of using lipiodol, as proposed by Sicard and Forestier,[2] will undoubtedly prove of enormous value. It should be emphasized also that the aspirating needle should not be used in cases of suspected pulmonary suppuration because of the danger of creating an empyema from leakage of pus along the needle track.

The mechanism of healing of an abscess of the lung is the same as that of any other abscess. When this mechanism can be carried out spontaneously, healing occurs with the same degree of promptness and satisfaction that occurs with abscesses elsewhere. It is not surprising, therefore, to find that many pulmonary abscesses heal spontaneously without treatment. It is impossible to state in what proportion healing occurs in this way, because probably in the majority of instances such abscesses are not recognized clinically. Refractoriness in the healing of a pulmonary abscess is usually due either to inadequate drainage or to difficulty in the obliteration of the abscess cavity. In most tissues of the body, healing of an abscess occurs because, after drainage, its walls fall together, and in healing in this way the cavity is quickly obliterated. In the lung, however, it is often more difficult for the walls of the abscess to fall together because they are held apart by a rigid chest wall on one side and perhaps by adhesions on the other. In this respect, abscesses in the lung resemble somewhat abscesses in the bones, and they often display the same tendency to chronicity. In addition, because of suppuration, the cartilage in the walls of the bronchi often becomes necrotic. The bronchi then become dilated, and extensive deposition of fibrous tissue in their walls occurs. The normal epithelial lining is in part replaced by granulation tissue which bleeds easily and leads to pulmonary hemorrhages. This condition of so-called bronchiectasis, as might be expected, occurs often hand in hand with chronic pulmonary abscess; and it is often impossible to draw any sharp distinction clinically between the two conditions, although by many clinicians they are regarded as more or less distinct entities.

With these brief considerations before us, it will be seen that the principles of treatment, in the main, may be classified into (1) measures directed against the exciting cause; (2) the promotion or improvement of drainage; (3) the collapsing of cavities; (4) the removal of chronically diseased tissue, and (5) general supportive measures, with particular reference to light therapy. It is obviously also irrational to apply any particular form of treatment to all cases.

Measures directed against the exciting cause consist not only of the removal of foreign bodies,[3] a subject that has already been discussed by Dr. Jackson, the recognized master in this field; but they also consist of a direct attack on the invading organism so far as that is possible. Unfortunately, most of the organisms commonly encountered are not subject to attack by specific therapeutic agents that give striking results. Vaccines are of doubtful value. There is one type of infection, however, in which striking results may be obtained. I refer to those cases which are associated with a spirochetosis, first described by Castellani. In such cases arsphenamine is of remarkable value, sometimes leading to a prompt disappearance of the spirochetes and to a rapid healing of the lesion. The spirochetes may be found in the sputum or pus from either the acute or the chronic cases. In the experience of Singer and myself, they occur in about 2 per cent of all cases of pulmonary suppuration. Recently Kline and Berger[4] reported sixteen cases of spirochetal pulmonary gangrene, of which eleven were treated by arsphenamine with gratifying results. More recently, Bezançon and Etchegoin[5] described an improved method of finding the spirochetes in the sputum. Somewhat allied to measures directed against the exciting cause is the matter of correcting suppuration in the nasal sinuses. Astonishing improvement, especially in the cases of chronic pulmonary suppuration, often follows the treatment of chronic nasal suppuration. This question has not received nearly so much consideration as it deserves. Especially in children we have

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* Read before the Section on Diseases of Children at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Singer, J. J., and Graham, E. A.: Roentgen-Ray Study of Bronchiectasis, Am. J. Roentgenol. 15: 54 (Jan.) 1926.

[2] Forestier, J.: Roentgenological Exploration of the Bronchial Tubes with Iodized Oil (Lipiodol), Radiol. 6: 303, 1926.

[3] A condition closely allied to that of foreign body is broncholithiasis. It is much more common in cases of chronic suppuration than one would suppose from the literature. The coughing up of one or more broncholiths often results in the prompt recovery of the patient.

[4] Kline, B. S., and Berger, S. S.: Spirochetal Pulmonary Gangrene Treated with Arsphenamins, J. A. M. A. 85: 1452 (Nov. 7) 1925.

[5] Bezançon and Etchegoin, cited in Paris Letter, J. A. M. A. 86: 1228 (April 17) 1926.

noted a very frequent association of chronic nasal and chronic pulmonary suppuration.

Spontaneous drainage is usually accomplished through the trachea, but sometimes into the pleural cavity and more rarely through the chest wall after the lung has become adherent to it. To obtain the maximal spontaneous drainage through the trachea, it is necessary to place the patient in the most suitable position. We have found a specially constructed table to be most suitable for this purpose, and by means of it the postural drainage is carried out several times a day. This simple procedure alone is often sufficient to result in healing. An additional aid to drainage through the natural outlet is by means of repeated use of the bronchoscope with suction, as suggested by Jackson. When an abscess has ruptured spontaneously into the pleural cavity, it often happens that simple drainage of the empyema results in the prompt healing of both the pulmonary abscess and the empyema. In such a case a sudden rupture of the abscess into the pleural space apparently gives adequate drainage, provided the pus is allowed to escape through drainage of the pleura.

In some cases, surgical drainage of the pulmonary abscess is indicated. These are the cases particularly in which a large abscess is situated at the periphery of the lung, in which there is but little drainage through the trachea, and in which marked toxic symptoms are present. Ordinarily, unless adhesions are already present between the lung and the chest wall, the operation should be carried out in two stages, the first stage to create adhesions and the second to produce drainage through these adhesions. Surgical drainage is only rarely indicated in those cases in which the abscess is situated at the hilum, for those are the cases in which drainage by posture and through the bronchoscope gives the best results.

Surgical drainage in any case should not be undertaken too early, and especially not during the formative stage of the abscess. More and more conservatism is being shown in regard to this form of treatment by those who have had the largest experience in this kind of work. When a relatively small abscess is surrounded by a large edematous zone of pulmonary tissue, disastrous results are likely to follow surgical drainage, a point on which Miller and Lambert [6] have commented. In our own work we find that from year to year we are operating on a smaller proportion of patients than in previous years.

The collapsing of cavities may be artificially aided by pneumothorax, by avulsion of the phrenic nerve to produce paralysis of the diaphragm, and by thoracoplastic operations which have as their principle the extrapleural removal of portions of the ribs on the affected side in order to permit retraction inward and downward of the whole side of the chest. Methods of treatment such as these are chiefly indicated in those abscesses which are situated at or near the hilum, in which the collapsing of cavities in the lung will be accompanied by an increased drainage of pus into the bronchial tree. On the other hand, in those cases in which the abscess is near the periphery of the lung, any form of collapsing therapy is ill advised because it may lead to a rupture of the abscess into the pleural cavity, it may increase the spread of the infection in the lung, and it is more likely to reduce than to increase the amount of drainage into the bronchial tree. Of all the methods of compression therapy, artificial pneumothorax is the simplest and probably the safest, although even this procedure is not without danger, not only because of the complications just mentioned but also because of the danger of crowding over of the mediastinal structures if too much air is injected, and because of the danger of air embolism from injecting air into an open pulmonary vein, as shown by Schlaepfer.[7] This catastrophe also is especially likely to happen, presumably, if by mistake the air is introduced into the lung tissue instead of into the pleural cavity. To guard against such an occurrence it is advisable to use an instrument with an attached manometer so that by means of the demonstrated negative pressure it can be accurately determined that the needle is in the pleural space before air is introduced. Singer and I try artificial pneumothorax almost as a routine procedure in cases of abscess near the hilum before resorting to more radical surgical measures. We begin with a small amount of air, seldom more than 200 cc. in an average adult, and a proportionately smaller amount in children. Its value lies not only in therapy but also in diagnosis; for by this means much information can be obtained concerning the presence of adhesions, the location of the abscess, etc., which cannot be obtained in any other way. We have also found occasionally that in cases complicated by the spontaneous presence of non purulent pleural fluid, some of the fluid can be withdrawn and for it an equal or greater volume of air introduced, thereby continuing or increasing the compression exerted by the fluid. Childhood or infancy has not contraindicated the use of pneumothorax in our experience. Many others, including Rich [8] and Tewksbury,[9] have been enthusiastic advocates of pneumothorax therapy in pulmonary suppuration. Other methods of collapse therapy, such as thoracoplasty and avulsion of the phrenic nerve, should not be undertaken in cases of acute suppuration, but they occupy an important place in the treatment of chronic cases.

The removal of the diseased tissue, especially in the chronic cases, was recognized long ago as a desirable accomplishment if it could be done safely. Unfortunately, the ordinary operation of lobectomy has been associated with so high a mortality as to seem prohibitive to many. But before condemning it one should read the discussion of it by Lilienthal,[10] whose personal experience with this procedure has been greater than that of any one else. In other papers I [11] have described a method of removing the diseased tissue which is not accompanied by the chief danger of the ordinary lobectomy; namely, suppurative mediastinitis. It consists in reaming the diseased tissue out of the lung, by means of an actual cautery. It may be done in as many stages as desired. The control of hemorrhage has not been difficult in my experience, since the larger arteries encountered are branches of the pulmonary artery in which the blood pressure is low, usually about 25 mm. of mercury. This procedure, by making a large cross section of the bronchial tree, has the added advantage of providing better drainage than can be obtained by any other method. Also pressure can be exerted by packing in the wound. It combines in one procedure, therefore, the various principles that are known to be effective in the treatment of chronic pulmonary suppuration; namely, drainage, compression and removal of diseased tissue. It is not used in the acute cases, but only in the most refractory chronic cases.

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[6] Miller, J. A., and Lambert, A. V. S.: The Treatment of Abscess of the Lungs, Am. J. M. Sc. **171**: 81 (Jan.) 1926.

[7] Schlaepfer, K.: Fibrosis of Lung Following Ligation of Pulmonary Artery, Combined with Phrenicotomy and Following Partial Occlusion of Pulmonary Veins, Arch. Surg. **6**: 358 (Jan.) 1923.

[8] Rich, H. M.: Acute Lung Abscess Treated by Therapeutic Pneumothorax, Am. J. M. Sc. **164**: 428 (Sept.) 1922.

[9] Tewksbury, W. D.: Acute Pulmonary Abscess Following Tonsillectomy Treated with Artificial Pneumothorax, Ann. Clin. Med. **4**: 347 (Oct.) 1925.

[10] Lilienthal, Howard: Thoracic Surgery, Philadelphia, W. B. Saunders Company, **2**: 82-284, 1925.

[11] Graham, E. A.: Cautery Pneumectomy for Chronic Suppuration of the Lung, Arch. Surg. **10**: 392 (Jan.) 1925; Rôle of Surgery in the Treatment of Pulmonary Suppuration, J. A. M. A. **85**: 181 (July 18) 1925.

In chronic cases of both bronchiectasis and of clinically diagnosed lung abscess, the general principles of treatment are the same. In detail, however, they differ. For example, methods that produce permanent compression have been used to great advantage in some of these. Hedblom[12] has had excellent results in improving the condition of patients with bronchiectasis by using the operation of extrapleural thoracoplasty. Avulsion of the phrenic nerve has often proved a useful adjunct to thoracoplasty in these cases. But even in cases in which the condition has been present for several months or a year, we have found that simple pneumothorax therapy is often effective.

In treating any case of pulmonary suppuration, it is important to give attention to the building up of the patient's resistance as much as possible. High caloric diets are advisable, and heliotherapy is a very important adjunct that should not be neglected.

The treatment of cases of bilateral suppuration has usually been regarded as practically a hopeless procedure. But by judicious use of the various principles of treatment outlined above it has been possible to relieve of their symptoms several patients with bilateral suppuration and to improve others. Singer and I[13] recently reported our results in a series of such cases. In one case of acute bilateral pulmonary abscess the operation of cautery pneumectomy was done on both sides in a man who was nearly moribund at the time. In one side complete healing occurred and in the other a bronchial fistula remains, but the man is at work earning his living. In some chronic cases we have treated the worse of the two sides with pneumothorax, followed by the complete recovery of the patients. We have also concluded from these cases that in many instances a patient who seems to have a bilateral lesion from the clinical and roentgenologic standpoints may after all have chiefly a unilateral lesion from which most of the symptoms are coming.

In considering the management of cases of pulmonary suppuration, one must also bear in mind certain aspects that concern the prognosis. Until specific means of combating the particular infection in any case are discovered, pulmonary suppuration will probably of necessity be associated with a high mortality, no matter what form of medical or surgical treatment is instituted. It will also carry with it a high percentage of chronic invalidism. Cases of multiple abscesses will necessarily be associated with a less favorable prognosis than those of a large single abscess that can be satisfactorily drained, although we have treated successfully with the cautery operation some cases of multiple small lung abscesses. The type of infection also probably affects the prognosis somewhat. But one of the most distressing and serious aspects of pulmonary suppuration is the complications, and of these perhaps the most tragic is cerebral embolism, sometimes followed by sudden death and at other times by the development of brain abscess. Tuffier[14] considered the coincidence of brain abscess as high as 13 per cent. This figure is probably too high, yet the complication happens sufficiently often to make it apparent that pulmonary suppuration will probably always carry with it a relatively high mortality regardless of the type of treatment instituted. Other serious complications are hemorrhage, spread of the infection in the lungs, and abscesses elsewhere in the body. In the adult also the possibility of a carcinoma of the lung, either primary or secondary, must always be considered. Often the first symptoms of pulmonary carcinoma are those due to abscess. It will be seen, therefore, that no satisfactory conclusions can be drawn from any small series of cases treated according to any particular method.

In the last five years, Singer and I have treated 218 cases of pulmonary suppuration, exclusive of empyema and tuberculosis. Of this number, forty were in children under twelve years of age. Included in this number are cases of both acute and chronic suppuration. The methods of treatment with the results obtained are given in the accompanying table.

Methods of Treatment and Results Obtained

	Cases	Free from Cough	Died
Postural drainage and general measures	24	21	3*
Pneumothorax	2	2	.
Surgical drainage	2	2	.
Cautery pneumectomy	7	5	1†
Bronchoscopy for foreign body	4	3	0‡
Lobectomy	1	.	1
Total	40	33	5

* The fatal cases in this group all presented multiple abscesses of the lung or suppuration in other parts of the body.

† Three of these patients, although free from cough, have remaining bronchial fistulas. One patient died from hemorrhage on the tenth day after the cauterization, the only death from hemorrhage in thirty-one cases of radical cautery pneumectomy in both children and adults. One other patient of this series died a year after the cautery operation, supposedly from cerebral air embolism during an operation undertaken to close a bronchial fistula. He was free from cough and other symptoms at the time of the later operation, and for that reason this fatality is not included as a death due to the operation of cautery pneumectomy.

‡ One patient on whom bronchoscopy was performed for foreign body has not had much improvement in symptoms from the removal of the foreign body. At present he seems to be developing bronchiectasis. This series does not include a larger number of cases in which foreign bodies were removed before extensive suppuration had occurred. The bronchoscopists were Drs. M. F. Arbuckle and Arthur Proetz.

Of this series of forty cases of pulmonary suppuration, thirty-three patients, or 82.5 per cent, are free from cough and other symptoms. The mortality has been 12.5 per cent.

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[12] Hedblom, C. A.: Graded Extrapleural Thoracoplasty in the Treatment of Diffuse Unilateral Bronchiectasis, Arch. Surg. **8**: 394 (Jan.) 1924.

[13] Singer, J. J., and Graham, E. A.: The Treatment of Bilateral Lung Suppuration, Am. Rev. Tuberc. **13**: 225, 1926.

[14] Tuffier, quoted by Sauerbruch, F.: Chirurgie der Brustorgane, Berlin, Julius Springer **1**: 569, 1920.

Essential Thrombopenia.—Recently a separate group of purpura has been described under the title of "Essential Thrombopenia" or "Thrombocytopenia." Frank, who is responsible for this, definitely stated that he considered the entity as identical with what has been described as purpura hemorrhagica in the past. It appears . . . that he includes grades far less severe than would have been classified clinically as purpura hemorrhagica. The justification of such an entity, therefore, cannot rest on the clinical manifestations and must depend on features in the blood. This is a question of special importance, since it is widely stated not only that splenectomy is indicated in this group, but that it should be performed in no other type. . . . The cases now being regarded as purpura hemorrhagica or essential thrombopenia are mainly those that in the past would have been regarded as severer or more chronic forms of purpura, but not of the severity which used to justify the term purpura hemorrhagica. —Tidy, H. L., *Lancet*, Aug. 21, 1926.

CARDIAC ASTHMA [*]

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Cardiac asthma may be defined as a paroxysmal dyspnea, developing suddenly while the patient is at rest, accompanied by a sense of suffocation and occurring in organic heart disease. The attacks of dyspnea are often associated with definite signs of acute cardiac weakness.

The term cardiac asthma has unfortunately sometimes been used as a synonym for the ordinary dyspnea of cardiac failure and sometimes for Cheyne-Stokes breathing. Objection was made by Sir Clifford Allbutt [1] to the employment of the term asthma for the attacks under consideration. "Asthma," he says, "is not a cardiac affection at all, and is not to be confounded with affairs primarily of the heart or circulation." He preferred the designation paroxysmal dyspnea of high blood pressure for the disease or symptom complex. The Greek word asthma, however, was used in the Iliad in the sense of an oppression, and, as thoracic oppression is a characteristic feature of the paroxysmal dyspnea of cardiac disease, the use of the term asthma certainly has some etymological justification.[2] Some attacks of cardiac asthma resemble bronchial asthma closely, even to the expiratory type of dyspnea and are, as a matter of fact, often mistaken for the latter by physicians as well as laymen. Heberden,[3] who gave the first detailed description of angina pectoris, describes in his commentaries, under asthma a case in which he recognized that the attacks were due to heart disease. I do not see how any one who uses the term angina pectoris can criticize the employment of the designation cardiac asthma with any show of consistency. Angina is a word applied to other conditions quite unrelated to heart pain, and the expression angina pectoris lacks any reference to the heart. Stenocardia is a more accurate designation for the symptom complex known as angina pectoris, yet how rarely is it used today. As the name cardiac asthma has been employed in French, English and German medical literature for about a hundred years to designate paroxysmal attacks of disturbed breathing in heart disease, it has probably come to stay, whether or not it is objectionable, as Sir Clifford Allbutt thought.

Hope [4] seems to have introduced the term cardiac asthma into English medicine. In his book on diseases of the heart, he has a chapter devoted to what he called cardiac asthma. He describes well a typical attack, but the clinical picture he drew of the condition is obscured by including under the designation of cardiac asthma the continuous dyspnea of far advanced heart failure and seizures of what were undoubtedly Cheyne-Stokes breathing, a condition in which the patient has no respiratory distress.

William Stokes,[5] in his textbook on heart disease, speaks of cardiac asthma as a definite clinical condition. He goes on to say that the disease, which in Ireland most often gets the name of angina pectoris, might be more properly designated as cardiac asthma. The two cases of cardiac asthma he reports in his book are atypical. Doubtless coronary endarteritis and cardiosclerosis were very rare in Ireland, or Stokes, one of the best clinical observers of his age, would have given us vivid pictures of both angina pectoris and cardiac asthma. It seems extraordinary, but he states that he never saw a case of classic angina pectoris as described by Heberden and Latham.

The symptom complex known as cardiac asthma has received surprisingly little attention from American writers. The term cardiac asthma does not appear in Osler's textbook of medicine; the definite clinical condition is not described under any other name, nor is it included in Osler and McCrae's System of Medicine. In a brief statement on the pulmonary features of angina pectoris, Osler and McCrae [6] undoubtedly refer to the mixed form of cardiac asthma and angina pectoris. But in Osler's lectures on angina pectoris, both in the first series [7] and the Lumleian lectures,[8] he describes the attacks of paroxysmal dyspnea as a respiratory *form of angina.* In the latter lectures, he reports in detail a number of cases he had personally observed. In describing a typical case in a woman, aged 54, that was studied in his wards at Johns Hopkins, he says: "We often discussed the character of the paroxysm, as it was suggested that she might have had asthma previously. In the suddenness of the onset and the rapidity with which the attacks came on, the limited duration and prolonged expiration suggested bronchial asthma." It seems to me that such a condition due to heart disease as he here describes is most appropriately called cardiac asthma.

Sir James Mackenzie was the first of our generation in England or America to realize the importance of cardiac asthma as a clinical entity. Sir Clifford Allbutt, in a letter to Dr. George A. Gibson, read in a discussion on asthma at a meeting of the British Medical Association in 1911, referred to those who used the term cardiac asthma as "slovenly people" for their lack of precision in the use of terms. This lead Mackenzie to engage in a lively polemic against Allbutt in the columns of the *British Medical Journal.* Mackenzie [9] defended the employment of the term with vigor and success. "I have seen only a few cases during an attack," he says in one of his letters to the editor, "and those I saw when I was engaged in general practice and was summoned in the middle of the night because of the patient's distress. Sir Clifford Allbutt puts forward the suggestion that it is possible he may never have seen such a case, and I am inclined to think that this is probably the reason why he disagrees with the term cardiac asthma." It is, as Mackenzie intimates, a symptom complex that can be best studied by the general practitioner. Here is an opportunity for clinical research open to every family physician, as careful observations of attacks of cardiac asthma at the bedside in the patients' homes are all too few.

I think that Mackenzie's clear statements of what he has learned from personal observation must have made some impression on Allbutt. At any rate, it was not long after these letters were written that he had an opportunity of observing an attack, and in his book on angina pectoris, published in 1915, he gives us one of the best descriptions of the paroxysm of severe cardiac asthma to be found anywhere.

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[*] Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926

[1] Allbutt, Clifford: Diseases of the Arteries Including Angina Pectoris, London 2: 315, 1913

[2] Hoffmann, F. A.: Asthma cardiale, Die deutsche Klinik, part 2, Erkrankungen des Herzens, Berlin and Vienna 4: 37, 1907

[3] Heberden, W. Commentaries on the History and Cure of Disease, ed. 2, London, 1803, p 68

[4] Hope, J: A Treatise on the Diseases of the Heart, ed. 3, London, 1839, p 393.

[5] Stokes, William: The Diseases of the Heart and the Aorta, Philadelphia, 1854.

[6] Osler, William; and McCrae, Thomas: The Principles and Practice of Medicine, ed 10, New York, 1925, p 859.

[7] Osler, William: Lectures on Angina Pectoris and Allied States, New York, 1901, p 80

[8] Osler, William: The Lumleian Lectures on Angina Pectoris, reprinted from the Lancet, March 12 and 26, and April 9, 1910, p 17.

[9] Mackenzie, James: Cardiac Asthma, Brit. M. J. 2: 1231, 1911.

He[10] says:

> I see again, with the vividness of life, the desperate conflict of a strong man with a paroxysm of suffocation which recently some of us witnessed in a hospital ward, during an examination. The patient, seized and throttled before he could cry out, sprang up livid to wrestle with death. The desperate conflict made the enemy almost visible to us. Now this way, now that, springing up in bed to fight from the edge of it, to sink back in utter exhaustion, but only to rise again panting with the sweat streaming from him, desperately to renew the battle, the scene was almost as distressing to the bystanders as to the victim. Some one exclaimed, "Angina pectoris." Thoracic agony it was indeed, but dyspnea is not a character of angina pectoris. The attack, akin as such attacks may be to the paroxysmal dyspnea of Bright's disease, was in this case, as it may be in Bright's disease, a paroxysm of high pressure dyspnea. His heart was laboring and hypertrophied, the arteries thick and the arterial pressure very high.

In a thorough study of sixty-three cases of syphilitic aortitis, Longcope[11] obtained a history of attacks of paroxysmal dyspnea (cardiac asthma) in nine cases. He observed a number of the attacks in different patients, and the following description of one of them was recorded at the bedside:

> Suddenly during rounds at 10:40, the patient showed signs of great distress. He sat up in bed and gave a sharp agonizing cry for help. Going immediately to the bedside he was found sitting up, leaning forward with a pained, anxious expression, and showing the most marked dyspnea. He implored us to relieve him of his distress, but talked quite intelligently throughout the attack, and said there was no actual pain, but terrific difficulty in getting his breath. The supraclavicular spaces were retracted during inspiration; the chest moved scarcely at all, while the respiratory excursions of the diaphragm were extreme. Respiration was rapid, and though inspiration seemed difficult, expiration was accompanied with the greatest effort and exertion, and was comparatively much prolonged. The pulse was 120. The chest was hyperresonant, and on auscultation were heard diffusely scattered sibilant and occasional crackling râles. About the height of the attack the patient began to sweat about the head and face. At this time, too, he began to cough and expectorate a small quantity of thick, blood-stained mucus.

My interest in cardiac asthma was aroused by Krehl, when a student in his Tübingen clinic in 1902. He had at that time written for Nothnagel's System, in his monograph[12] on diseases of the myocardium, one of the best accounts of cardiac asthma to be found in the literature. A few years later, in 1908, I received help and encouragement in the study of this condition from the late Sir James Mackenzie, which I gratefully acknowledge. I have analyzed a series of 366 cardiac cases seen in private practice in which I myself recorded the anamnesis and made the physical examination. I have selected for study all the cases in which a history of attacks of paroxysmal dyspnea was obtained. In fifty-three of the series, there was no organic disease of the heart or kidneys. These comprised cases of cardiac neurosis, physiologic arrhythmias and physiologic murmurs. In three of these there were attacks of paroxysmal dyspnea, but all unattended with oppression or any real sense of suffocation. They were evidently of a neurotic nature and should not be confounded with cardiac asthma. Among the 313 cases of organic heart disease was one case of paroxysmal dyspnea, with attacks coming on when the patient was at rest, but without any distress. The patient, a nervous woman, did have mitral stenosis in addition to a vasomotor neurosis. The case belongs likewise in the group of paroxysmal dyspnea of nervous origin, making a total of four among 366 patients. In considering the cases that should be classed as true cardiac asthma, I have excluded (1) paroxysms of breathlessness brought on by exertion, and (2) attacks of increased dyspnea in orthopneic patients with advanced heart failure.

There were thirty-nine patients with a history of paroxysmal dyspnea with oppression or sense of suffocation. These I regard as examples of true cardiac asthma. It is at once apparent that this condition has been a not uncommon occurrence in my clinical experience, as thirty-nine cases in a series of 313 cardiac cases is 12 per cent.

Thirty-six of these thirty-nine cases of cardiac asthma were in patients in which the diagnosis of the senile heart or cardiosclerosis was made. Under other systems of classification, they would be grouped as cases of chronic myocarditis, hypertensive cardiovascular disease, myocardial degeneration or coronary endarteritis. Only two of the cases were in patients with rheumatic heart disease; both had aortic insufficiency. There was one case of syphilitic aortitis, but there were only five cases of syphilitic disease of the heart or aorta in the entire series of 313. Hence, one case is equal to 20 per cent, which is higher than the incidence in Longcope's series of sixty-three cases of syphilitic aortitis, in which cardiac asthma occurred in nine, or 14 per cent.

TYPES OF CARDIAC ASTHMA

The cases can be divided into four groups:

1. Pure cardiac asthma. In this group, a subdivision is made into the mild and severe cases. The latter consist of agonizing attacks of suffocation, often associated with a sense of impending death. These attacks are fortunately much rarer than the mild attacks, which are often mistaken for bronchial asthma.

2. Mixed anginous form—cardiac asthma with angina pectoris. In pure angina pectoris, there is no embarrassment in breathing, as Heberden pointed out in his original description of the disease, and in pure cardiac asthma no pain. Attacks are not uncommon that may be regarded by one observer as angina pectoris with dyspnea and by another as cardiac asthma with pain.

3. Mixed edematous form—cardiac asthma with pulmonary edema. Some attacks of cardiac asthma end in pulmonary edema. There is evidently a close relationship between the two conditions. I have notes of two cases of cardiac asthma without angina, in which the expectoration of a considerable amount of thin, frothy fluid occurred in one or more of the severe attacks.

4. The combined form—cardiac asthma with both angina and pulmonary edema. In six cases, attacks occurred of urgent dyspnea, severe pain in the chest, and cough with thin, frothy sputum.

DESCRIPTION OF A SEVERE ATTACK

I have notes on nine attacks of cardiac asthma that I have seen in six patients. In four the attacks were severe, and in two relatively mild. Each case differed from the others in certain details. In the attack I shall describe, the paroxysm did not simulate bronchial asthma closely. The same patient later had a typical attack of less severity, with sonorous râles over both lungs, which was mistaken for ordinary asthma by the well trained physician who examined him. Previous attacks had been regarded by his earlier physicians as bronchial asthma. I select it, however, as an excellent example of the severest form of paroxysmal dyspnea, in which death seemed imminent:

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[10] Allbutt, Clifford: Diseases of the Arteries Including Angina Pectoris, London 1: 401, 1915.

[11] Longcope, W. T.: Syphilitic Aortitis: Its Diagnosis and Treatment, Arch. Int. Med. 11: 26 (Jan.) 1913.

[12] Krehl, L.: Die Erkrankungen des Herzmuskels und die nervösen Herzkrankheiten, Vienna, 1901, pp. 116-120.

W. W. C., a man, aged 66, awoke about 11:30 p. m., March 2, 1925, with urgent dyspnea. I saw him at 1 o'clock. He was sitting up in bed, struggling for breath. His face was somewhat cyanotic. Every few minutes he would throw himself about the bed in his agony. "It is hell," he gasped. He thought he was dying and begged for relief from the awful feeling of suffocation. His head and body were covered with cold sweat, and the skin was rather cool. The respirations were labored, 32 to the minute. There were loud tracheal râles, audible at a distance, and there was apparently considerable secretion in the throat, but he did not cough or raise any sputum. The radial pulse was full, regular, of good tension and 120 to the minute. No cardiac impulse could be felt. (When he was last examined in my consulting room, February 24, there had been a marked heaving impulse over the lower half of the left front of the chest.) The heart sounds could not be heard with the ear to the chest or with a stethoscope. There was good resonance over the lungs and no râles. Before examining him, I gave one-fourth grain (16 mg.) of morphine subcutaneously and repeated the dose ten minutes later. Relief from the distress was obtained in about twenty minutes after the second injection. He dropped off to sleep for a few minutes before I left him, and the respirations fell to 20.

Table 1.—*Blood Pressure During Severe Attack of Cardiac Asthma, April 15*

Time	Pulse	Blood Pressure Systolic, Mm. Hg	Blood Pressure Diastolic, Mm. Hg	Comment
11:50 a.m.	152	200	170	Orthopnea and cyanosis; skin moist and cold
11:53	...	...	...	0.7 cc. epinephrine subcutaneously
11:55	128	210	170	
11:59	...	...	...	Respirations, 31; breathing wheezy; gurgling in throat
12:01 p.m.	148	...	...	Cough; a little bloody sputum
12:03	...	190	160	
12:06	...	194	156	17 mg. morphine sulphate subcutaneously
12:07	136	...	...	
12:08	...	182	148	More comfortable
12:09	128	...	...	
12:11	...	206	140	
12:12	128	...	...	
12:14	...	170	142	
12:16	...	182	...	Blood pressure by palpatory method, no sound over brachial artery
12:17	...	190	140	
12:18	...	...	...	First heart sound not heard; pulmonary second sound not accentuated; sonorous râles over lungs
12:19	...	...	...	Respirations, 25; face and hands cyanotic
6:10	104	168	126	Respirations, 16; comfortable

The following morning, he felt quite comfortable. He had slept from 1:45 to 6 a. m. Respirations were 20; the pulse was 92, regular and with good volume.

The following events immediately preceded the severe attack: For three or four days he had what he called a cold. The only symptom, however, was gurgling sounds in the throat. The night of March 1, he awoke about 4 a. m. and was a little breathless. He did not have to elevate his head, which was supported by two thin pillows as usual. March 2, he painted in his studio about an hour and a half, but during the day was conscious of a little difficulty in breathing. This increased before dinner and he felt quite uncomfortable, but after dinner he had less dyspnea. He went to bed at 10 o'clock and promptly fell asleep. He was awakened by shortness of breath about 11:30. He sat up in bed. The dyspnea increased. There was intense suffocation, but no pain. He felt as if he were drowning. He rolled from side to side. It was agonizing. He could not imagine anything much worse.

April 15, 1925, he was suddenly seized about 11:30 in the forenoon with urgent dyspnea. He had been kept at rest in the New England Baptist Hospital since the attack on the night of March 2. I saw him shortly after the onset of the seizure. Although a severe attack, the suffocation was less than in the previous one, and this paroxysm resembled bronchial asthma. His blood pressure taken repeatedly during the previous six months had averaged about 160 mm. systolic and 100 mm. diastolic. The last observation was made, March 10, when the systolic pressure was 146 mm. The record of blood pressure during a severe attack is given in table 1.

On the following morning when I saw him, his breathing was easy. He had had a good night. The systolic blood was 137 mm. and the diastolic 124 (the average of four determinations). In the early morning of April 21, he had another attack that I witnessed. There was orthopnea, labored breathing, and loud tracheal râles. Cyanosis was present, especially marked over the body; there was some sweating; the skin was cold and the pulse regular.

The respirations at 4:34 a. m. were 28. At 5 a. m., he was given 0.7 mg. of strophanthin (Böhringer's) intravenously. The dyspnea ceased at about this time. He never had any more attacks. May 9, 1925, the next observation of the blood pressure was recorded. The systolic pressure was 186, and the diastolic, 112; the pulse was 76 and regular. Dyspnea, on moderate exertion such as climbing stairs or walking on the level, never developed. He died suddenly at the breakfast table in February, 1926. The duration of life after the first attack of cardiac asthma was two years.

In the case of W. R. C., seen with Dr. C. S. Millet of Brockton, during an attack of moderate severity, the systolic blood pressure rose above 200 and the diastolic to 170. The diastolic pressure was then at a higher level than the systolic had averaged prior to the attack.

In a patient of Dr. T. F. Rock of Nashua, the rise of systolic blood pressure during a mild attack was only 20 above the previous level, and the diastolic pressure did not exceed 110.

In the case of S. G., seen with Dr. H. Morrison in Roxbury, during a paroxysm of long duration, the blood pressure was abnormally low, the systolic being 105 and the diastolic, 63.

Table 2.—*Blood Pressure During Attack of Cardiac Asthma, April 21*

Time	Pulse	Blood Pressure Systolic, Mm. Hg	Blood Pressure Diastolic, Mm. Hg
4:28 a. m.	...	200	150
4:30	124	...	...
4:34	...	200	150
4:50	128	...	...
1:30 p. m.	100	182	120

A marked elevation of the blood pressure in attacks of cardiac asthma has been observed previously. Osler states that in some of his patients the systolic pressure rose to 340 mm. In the attack observed by Longcope occurring in syphilitic aortic insufficiency, the systolic blood pressure rose from 200 to 247 mm. The diastolic pressure before the seizure was 70 mm., and did not change during the attack. A similar rise may occur in acute edema of the lungs. Amblard[13] has reported four cases in which the systolic pressure rose to 280, 270, 250 and 240, and the diastolic to 210, 190, 180 and 160. As is well known, the blood pressure in angina pectoris also tends to increase during attacks.

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[13] Amblard, L. A.: La tension artérielle dans l'oedeme aigu du poumon, Presse méd. **19**: 657 (Aug. 12) 1911.

DESCRIPTION OF A MILD ATTACK

The patient, usually a man and more than 60 years of age, goes to bed feeling perfectly well. He may have had slight breathlessness or substernal pain on exertion, for some time, possibly six months or more, but as a rule of slight degree, so that he has paid no attention to his symptoms.[14] He sleeps soundly until he is suddenly awakened by a sense of suffocation and oppression, which causes him to spring upright in bed, and if it persists he sits on the side of the bed, or gets up and walks to an open window. The breathing is labored, and the feeling that he cannot get air into his chest continues. In a few minutes the attack may cease or he begins to cough. The breathing is often wheezy. The cough is at first dry, but after a short time a little thick mucus is raised, which is occasionally tinged with blood. Cyanosis has been noted only in the severe attacks. There may be an ashy pallor instead of cyanosis. The breathing at length becomes easier, and soon afterward the breathlessness entirely disappears. He is able to return to bed and sleeps fairly well with the head low the remainder of the night. The average duration of an initial mild attack is thirty minutes. Including all twenty-six cases of which I have a note on the length of the attack, mild as well as very severe, the average duration was one hour.

Table 3.—*Age of Patients at Onset of Cardiac Failure*

Years	Number of Cases
From 1 to 40	0
41 to 50	5
51 to 60	9
61 to 70	19
71 to 80	5
81 to 90	1
	39

EQUIVALENTS OF CARDIAC ASTHMA

Paroxysmal Nocturnal Cough.—I have seen a case occurring in organic heart disease. It was the first symptom of heart failure. The patient, aged 48, had cardiosclerosis, with definite enlargement of the left ventricle. He was seen with Dr. J. S. McLester in Birmingham. He had had many attacks, all at night, awakening him from sound sleep. There was no breathlessness and no chest pain during the seizures. There was no sputum. The lungs were normal. Rest in bed, together with digitalis and the Karrel diet, was followed by a cessation of the attacks.

Paroxysmal Nocturnal Anxiety.—Two cases fall into this classification. Both patients were awakened night after night by a sense of indefinite anxiety, and felt impelled to spring out of bed. There was no pain, cough, breathlessness or sense of suffocation. After a short interval, from five to fifteen minutes, they were able to go back to bed, and soon fell asleep.

These two unusual types of nocturnal paroxysms have not been included in my series of cardiac asthma cases, but I feel that they are closely related to it. In both, as in cardiac asthma, the attacks are paroxysmal and nocturnal. In both, the upright position is assumed instinctively. Cough, the symptom of the first, is common in cardiac asthma. Anxiety and restlessness, the symptoms in the second group, are constantly present in severe cardiac asthma.

ETIOLOGY

Age.—The relation that age bears to the occurrence of cardiac asthma, as shown in table 3, in nonsyphilitic cases is interesting and suggests most strongly the causal relation arteriosclerosis bears to the symptom complex.

Sex.—The condition is more commonly encountered in men than in women. In the present series there were twenty-eight males and eleven females.

Relation to Angina Pectoris.—Fifteen of these thirty-nine patients had attacks of angina pectoris in addition to cardiac asthma at some stage of their illness, and eight had anginal pains during attacks of cardiac asthma. Although the relationship of cardiac asthma and angina pectoris seems undoubted, it is important to emphasize that in the records of twenty-eight of the cases it is definitely stated that the patients had no pain in the attacks of paroxysmal dyspnea.

Relation to Hypertonia.—In eighteen of thirty cases of which I have a record of the systolic blood pressure, or 60 per cent, it was above 150, and in eleven, above 180. It is probable that in some of my patients with advanced cardiac failure in whom the systolic blood pressure was below 140, it had previously been at a higher level. The diastolic pressure was above 100 in seventeen of twenty-three cases. Two of the patients with a diastolic pressure below 100 had aortic insufficiency.

Relation to Renal Insufficiency.—The high blood pressure in my cases was apparently due to primary hypertonia. In no case was there any severe disturbance of renal function. The idea that the condition I am describing is often renal rather than cardiac asthma seems rather widely held. The evidence here presented and a recent review[15] of the literature offer no support for the theory that nocturnal paroxysmal dyspnea is frequently a uremic manifestation.

Relation to Cardiac Dilatation.—In twenty-eight of the cases, the physical examination indicated that the heart was enlarged to the left. In only two cases was there evidence of enlargement to the right. In twenty-four cases, symptoms or signs of cardiac weakness existed at the time of the examination.

Pathogenesis.—The exact cause of cardiac asthma is unknown. Why should the victim be seized with violent breathlessness while quietly sleeping when he has been able to engage in the regular exertion of daily life without any discomfort? This is a question that has not been satisfactorily answered. The initial paroxysm was nocturnal in twenty-nine of thirty-two cases, and one of the remaining three belongs in the same category, as the attack came on at 6:30 a. m., before the patient had left his bed. In 94 per cent the initial seizure occurred when the patient was quiet in bed. It differs from ordinary cardiac dyspnea in another way: In an attack of cardiac asthma, the patient seems instinctively to move his body, seeking relief, while in ordinary cardiac dyspnea, he keeps as quiet as possible after having assumed the position in which he can breathe with the least discomfort.

In discussing the causation of this condition, we are treading a dangerous ground, as quagmires of speculation lie all about us. It is evident, however, that cardiac asthma is in some way closely related to arteriosclerosis, syphilitic aortitis, angina pectoris and aortic insufficiency. It does occur, very rarely if at all, in connection with mitral disease, or rheumatic myocarditis, acute or chronic. Now, cardiosclerosis, angina pectoris and syphilitic aortitis have at least one thing in common, and that is the frequency of associated disease of the coronary arteries.

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[14] In thirteen of thirty-nine cases, 33⅓ per cent had no symptoms referable to the heart prior to the initial attack of cardiac asthma.

[15] Eppinger, H.; Von Papp, L., and Schwarz, H.: Ueber das Asthma cardiale, Berlin, 1924.

Cardiac asthma usually develops in patients who have a dilatation of the left ventricle and arterial hypertension. It has been thought by Krehl and many others that the attacks are due to a sudden temporary failure of the contractile power of the left ventricle, and probably they are. But, if that were the sole cause, it would scarcely explain the startling suddenness of dyspnea of great intensity and the elevated systemic blood pressure. When sudden failure of the left ventricle occurs, as in coronary thrombosis, the dyspnea is usually less sudden in its onset and less severe. Furthermore, the blood pressure falls in coronary thrombosis. Nervous influences are certainly at work in the production of cardiac asthma. There are undoubtedly peripheral factors to be considered. The high blood pressure, the profuse sweating, the cold skin indicate a vasomotor disturbance in the peripheral circulation. It has been recently shown by Eppinger, von Papp and Schwarz[15] that, in some cases (four out of six studied by them) the blood flow from the arteries to the veins is increased during attacks of cardiac asthma. In addition there may be an actual bronchial spasm, as Mackenzie thinks, a reflex disturbance produced in some way by the weakened heart.

There is evidently, as my observations show, an intimate relation existing between angina pectoris, pulmonary edema and cardiac asthma.

Prognosis.—Most of the patients that I saw had attacks of cardiac asthma for only a few months at the time I examined them. This short duration of the disease in such a fairly large series of cases has a sinister significance, for most of the patients die within two years after their original seizure, and many die within a year. On the other hand, a few may live considerably longer. Two in this series lived ten years after the first attack. Death in an attack is relatively rare.

Treatment.—Benefit in attacks has apparently been obtained sometimes from glyceryl trinitrate, amyl nitrite, epinephrine and caffeine sodiobenzoate. There is a possibility of danger in the use of epinephrine, as death has occurred a few minutes after its administration in two cases to my knowledge. Morphine given subcutaneously in a goodly dose (one-fourth grain, or 16 mg.) is by far the best remedy for a severe attack. This may well be followed, if the patient has not had digitalis for four or five days, by strophanthin, 0.5 mg., intravenously. It is asserted that bandaging the limbs shortens the paroxysm.[15] Bleeding (from 500 to 700 cc.) is recommended if life seems threatened and the blood pressure is high.

There is no doubt that the occurrence of a single attack, even if the patient has apparently been in vigorous health, is a signal of grave disease of the heart muscle and should be treated accordingly. The patient should be given strict bed rest, in my opinion, for from six to eight weeks, or longer. Continued digitalization is of possible value in the prevention of recurrent attacks.

CONCLUSION

The statement regarding angina pectoris made by Dr. Latham nearly a hundred years ago applies to cardiac asthma today. "The idea of it cannot be made to rest in any definite form of disease beyond these. We are sure of what it is as an assemblage of symptoms. We are not sure of what it is as a disease." Our knowledge of it stops short with the symptoms, and these I have presented.

270 Commonwealth Avenue.

THE BEDSIDE STUDY OF AIR HUNGER*

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A great scientist said, "The last thing a deep sea fish would discover is water," an apothem which pointedly expresses the idea that we must transcend our most intimate contacts before we can comprehend them. This is literally true in the history of science, for scientific study of the heavens and the earth long preceded scientific study of the air, and only the most recent studies in medicine have been concerned about the medium in which we live and our adjustments to it. Respiration is such a nicely directed function and our respiratory need is so exquisitely balanced with our breathing mechanism that, until recent years, physicians were contented with the observation that there was a disturbed relation between these two factors, but analysis of the disturbance seemed superfluous, because the phenomenon was too obvious.

Now that chemical research has revealed so much concerning respiration, clinicians should aspire from objective studies of patients to predict what are the carbon dioxide and oxygen relations in the ventilating air with circulating blood, and also the relation between the automatic respiratory center and its oxygen supply. It is my purpose to show that bedside observations should enable us to recognize the kind of disturbance that has occurred in either the internal or external respiration that produces the symptom.

By air hunger is meant the subjective experience of air want. Dyspnea, tachypnea, hyperpnea and cyanosis are attendant phenomena and can be evaluated by objective observation, but the feeling of air hunger is what alarms the patient and leads him to seek medical aid. The physician is called for a single reason and that is to relieve air hunger, a subjective symptom that always is alarming to the patient. The symptom may be due to a misinterpretation of a nervous experience that very commonly plagues introspective persons, although their internal and external respiration is quite normal.

Genuine air hunger may originate from disturbances in the nerve supply to the lung; or there may be disturbances in the cardiorespiratory function, or internal respiration may be disturbed by alteration of the chemical composition of the blood or by disturbances in the lymph or blood supply to the respiratory center.

The most common exhibition of air hunger is associated with cardiorespiratory disease, and as the cardiac and respiratory functions are interdependent, our first problem is to learn how much each may share in producing the symptom.

In elderly persons, we most often have the problem to determine, for therapeutic reasons, whether air hunger has a cardiac or a pulmonary origin. Obviously, if air hunger is due to pulmonary stasis, cardiac stimulation is indicated. If lung ventilation is at fault, our problem is different.

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An old bronchitis with emphysema complicated by myocardial incompetence may offer some difficulty in disentangling the cardiac from the pulmonary sources for air hunger. In such a patient we have in addition to air hunger the signs of dyspnea and cyanosis. How can we dissociate the symptoms of circulatory from respiratory impairment

If the air hunger, dyspnea and cyanosis are due to cardiac incompetence, there must be a great reduction in the cardiac output. What evidence betrays the impairment in mass movement of blood as the source? If the body surface is warm, we can safely exclude cardiac failure as the source for the pulmonary signs. With incompetent cardiac output, the surface supply of blood is reduced, and therefore cooling of the skin is always perceptible to the examiner's hand. Warm cyanotic fingers in a patient means aortic anoxemia that is not due to impaired cardiac output. In cardiac failure the fingers are cold and cyanotic, and the cyanosis is peripheral in origin.

At Lakeside Hospital, Dr. Leas has devised a method by which he can measure the total heat loss from the lungs. By this method he has proved that in a normal person about 10 per cent of the total heat loss is by way of the lungs, but in cardiac stasis the percentage of total heat loss by way of the lungs may mount to 25 or even 30. This increase of proportional heat loss by way of the lungs simply means a lessened radiation from the body surface and an increased heat loss by radiation and vaporization of water by way of the lungs. To evaluate this shifting of heat loss requires considerable time and effort, but the procedure of perceiving the evidence for lessened radiation from the surface by applying the hand is so simple that its significance has been quite forgotten. Of course, there may be a cold body surface without cardiac stasis, and there may also be moderate cardiac incompetence with a body surface that is not strikingly cool; but a warm body surface does not occur in the presence of pulmonary edema and cyanosis due to cardiac incompetence.

This idea is important because patients who have bronchitis, emphysema and aortic anoxemia acquire globular cardiac enlargements in which the left and right ventricles equally partake. But in the presence of emphysema, estimation of the heart's size by percussion may be impossible if the patient is lying down. In this situation, we have recourse to the contour of the arch of the diaphragm, which gives us very dependable information.

If there is inspiratory narrowing of the subcostal angle and the lateral portions of the costal borders move laterad in inspiration, we can be quite sure that the moisture in the air spaces and the cyanosis are not due to emphysema, for emphysema severe enough to cause cyanosis will always cause sufficient flattening of the leaves of the diaphragm so that the entire costal margins will move mediad during inspiration.

If the inner portions of the costal margins move mediad and the outer portions laterad, the cyanosis will be found to be due either to cardiac stasis or to an extensive disease of the respiratory membrane which interferes with the transpiration of gases between the ventilating air and circulating blood. In other words, the cyanosis is not due to impaired ventilation of the lung, but to impaired ventilation of the blood.

This method of clinical logic is confirmed by other methods. A man, aged 45, had dyspnea and cyanosis, with hippocratic finger ends. The vital capacity was 1,500 cc. and normally should have been 4,000 cc. There was marked impairment of extensibility of the lungs, and there was also emphysema, as shown by the low position of the lung borders. When the patient was lying down, the inner halves of the costal margins moved mediad and the outer halves laterad. On this evidence we were led to infer that emphysema could not be the cause of the cyanosis, and, on the other hand, in spite of the enlarged heart, stasis could not be the cause of the bronchial moisture and rigidity of the lungs.

The coexistence of warm hands, cyanosis, rigid lungs, enlarged heart and moderate emphysema enabled one to postulate that the primary lesion was a diffuse interstitial pulmonary disease which produced an extensive disease of the respiratory membrane and that therefore there should be a disparity between the oxygen content of the alveolar air and the aortic blood. Furthermore, one could postulate that the mass movement of blood through the lungs should be normal. In fact, every clinical sign could be explained by an inadequate transpiration of gases between the ventilating air and circulating blood. Confirmation of this view was obtained by the carbon dioxide content of the alveolar air. Instead of being high as is always found when emphysema causes aortic anoxemia, this man's carbon dioxide content was only 4.5 per cent, which is lower than normal.

When a voluminous emphysema from its impairment of lung ventilation causes cyanosis, we find the carbon dioxide and oxygen contents of the alveolar air to measure their content in the aortic blood. The alveolar air gases balance those of the aortic blood. When the degree of emphysema is large enough to cause aortic anoxemia that is plainly visible as cyanosis, the lungs are large enough to flatten the diaphragm sufficiently to give it the mastery of the costal borders, so that with inspiration the entire costal margins of both sides move mediad during inspiration. But in our patient, only the subcardial diaphragm was flattened sufficiently to change the direction of movement of the inner portions of the costal borders to which it is attached. The outer halves of the costal margins moved laterad, because the degree of emphysema was insufficient to give the leaves of the diaphragm the mastery over the intercostal muscles in determining the direction of costal border movements. When the carbon dioxide content of the patient's alveolar air was determined, it was found to be only 4.5 per cent, whereas in emphysema severe enough to produce cyanosis, the carbon dioxide alveolar content would have been certainly as high as 7 per cent.

The fact that this man's alveolar carbon dioxide was below normal and that his blood was cyanotic proved that the respiratory defect lay in the respiratory membrane that intervenes between the alveolar air and the circulating blood. The blood circulation was not defective, because the hands were warm and the minute volume flow determined by the ethyl iodide method of Yandell Henderson proved to be 8 liters. The physical signs in this patient revealed the whole functional change. From the physical signs, we were enabled to prove that there was a diffuse interstitial disease of the lung that resulted in moderate emphysema and impaired transpiration of gases between the ventilating air and the circulating blood; we could also prove that both chambers of the heart were enlarged on account of chronic anoxemia, but they maintained a normal minute volume flow of blood. All these deductions were based on the observations that the body surface was warm, and on the contour of the phrenic arch in its subcardial and lateral portions. The contour of the diaphragm portrayed the nature and degree of cardiac enlargement and indicated the kind of pulmonary defect that caused the aortic anoxemia.

PAROXYSMAL TACHYPNEA

Paroxysmal tachypnea, a very unusual symptom of which I have seen six cases, occurred in the course of mediastinal disease which in two cases was associated with unmistakable syphilitic disease and syphilitic aortitis. Two were cases in which either syphilis or tuberculous disease was the cause, as both diseases were present, and two patients were tuberculous. The attacks in one patient were always associated with bradycardia. When the attacks came on, the heart rate would first drop from 80 to 40, and after a few of the slowed cycles the respiratory rate suddenly changed from 20 to 60 a minute. In none of the other patients did bradycardia occur. All the patients said they did not suffer from air hunger in the same way as after exercise. They had an irresistible impulse to breathe with great rapidity, and breathed with very shallow excursions, which were taken with the lung in the inspiratory phase. One patient, who also had asthma, early syphilitic disease of the spinal cord and blood spitting, had a respiratory rate during the attack of 76 a minute. One of my patients supposedly had asthmatic attacks with clearly proved pulmonary tuberculosis of one upper lobe; but when the attacks were described by the patient and his attending physician, they were clearly tachypneic and not asthmatic.

If one does not see the attacks they are likely to be passed over as asthma, for that is the only word patients know in relation to paroxysmal attacks of shortness of breath.

In spite of the very high respiratory rate, none of the patients superventilated their blood, because the excursions were very shallow. This striking symptom is apparently caused by some disturbance of the intrathoracic nerve supply to the lung; but what the mechanism may be is unknown, for our knowledge about the nature and results from irritative lesions of the sympathetic and parasympathetic nerve supply is not sufficient to explain this phenomenon. The only experimental evidence that offers even a suggestion is that of the Italian physiologist Baglioni, who many years ago found that stimulation of the pulmonary branch of the vagus in the dog caused slowing of the heart rate, with very rapid respirations while the lung was in the inspiratory phase.

PAROXYSMAL HYPERPNEA

I have seen only one case of paroxysmal hyperpnea:

> A man, aged about 40, had had hemoptysis due to early tuberculosis of the lung. The paroxysms were associated with vasomotor constriction in the arteries of the arms. It was the disappearance of the pulse at the wrists at the same time the intense air hunger came on that led to his seeking hospital aid. The carotid and femoral distributions were unaffected, and the blood pressure measured in the leg rose only 10 mm. of mercury during the attacks. When the patient was first seen, the signs of lung tuberculosis were not at all clear, but the history was very suggestive and three years later the patient presented himself, with pronounced tuberculosis of both upper lobes of the lungs; the paroxysms of hyperpnea in the meantime had ceased.
>
> At first, the attacks came on with severe exercise in which the arms were employed. One of the early attacks interrupted a boxing match in which the man was engaged. Later, numerous attacks came on with very moderate exercise in walking. If the patient lay prone on the floor and then raised his body by extending his arms while the palms of his hands were applied to the floor, an attack could be produced after this exercise was performed several times. Tetany never appeared, although there was certainly superventilation while the attacks lasted, for the patient breathed very rapidly and deeply, so that he gave a very good exhibition of forced breathing. There was not the slightest evidence for dyspnea. The large amount of ventilating air entered and left the lung without the least evidence for impairment in lung extensibility, and there was no evidence for any disturbance in the volume flow of blood.

Although the nervous mechanism that produced these attacks of hyperpnea in the presence of a normal blood chemical determination and normal external and internal respiration is quite beyond our knowledge of sympathetic and parasympathetic nerve supply to the lung; we are justified in assuming that the exciting cause was mediastinitis, because the patient had tuberculosis of the upper lobes of both lungs, and coincidently with the hyperpnea there was severe vasomotor constriction that was confined to the upper extremities.

SLUMBER APNEA AND WAKING HYPERPNEA

One conceivable source for slumber apnea is hypesthesia of the respiratory center due to its cellular deterioration from disease as seen in brain syphilis. Another source may be impaired blood supply to the center, as seen in arterial sclerosis. In both instances there is in the respiratory center a small margin of response which is further diminished by sleep. Consequently, apnea follows as the patient lapses into light slumber and, then, after periods that vary from twenty to seventy seconds, the mounting carbon dioxide arouses the respiratory center to activity which awakens the patient with air hunger. In myxedema, the functional changes are different, but produce the same symptom. The lower carbon dioxide production leaves a small margin for adequate stimulation of the respiratory center; consequently, with the further reduction of oxygen metabolism and the added hypesthesia of the center that occur in sleep, automatic respiration ceases for sufficient time until the mounting carbon dioxide production arouses the patient by air hunger. This form of air hunger is generally misapprehended, because the patient does not know that apnea preceded the moment of waking. The patient tells a story of waking suddenly with a sense of suffocation that compels him to sit up and breathe violently for a few minutes before the sense of air hunger is allayed. He may think he has nocturnal asthma, and unless the physician is critically inclined this interpretation is accepted. The phenomenon is always due either to a disturbance in the respiratory center, or to a lowered oxygen metabolism, as in myxedema.

CARDIOVASCULAR DISEASE

Cardiovascular disease is the most common cause, and waking hyperpnea may be the only symptom from which some patients will complain in the early stage of the disease. One of my patients was so much disturbed by this symptom that he was awakened as often as twenty times in a night. Although he had a competent heart that enabled him to perform vigorous exercise during the day, he had a marked elevation of blood pressure and hypertrophy of the left side of the heart. His renal function was quite normal. Death occurred three years later from cardiac decompensation. Citrated caffeine in doses of 4 grains (0.26 Gm.), four times daily, has given more relief than any other treatment. The symptom rarely occurs in cerebrospinal syphilis, but in the absence of evidences of generalized arterial disease a hypesthesia of the sensory nucleus of the vagus should be suspected, and further evidences for syphilis of the central nervous system should be carefully sought. In view of the pathologic changes in syphilis of the central nervous system, it is surprising that the symptom is not a common occurrence, for I cannot conceive of a more favorable pathologic process for its production than meningo-angiitis syphilitica.

MYXEDEMA

Slumber apnea with waking hyperpnea was the symptom that led two patients with myxedema to seek medical aid. One had a large goiter, cardiac enlargement with rapid rate and arrhythmia, marked nervousness and severe edema with eczema of the lower extremities. The edema, cardiac enlargement, goiter and eczema and the waking hyperpnea all promptly disappeared with the administration of exsiccated thyroid (Thyroideum, U. S. P.). Another patient, a woman, had no goiter or cardiac enlargement. Her sole complaint was edema and weakness, and waking at night with air hunger. In fact, it was the slumber apnea and waking hyperpnea that led Dr. Christie of Lakeside Hospital to suspect a want of carbon dioxide production to be the cause of her waking with air hunger. No evidences for vascular, renal or central nervous disease could be found. The patient was then given thyro-iodine, and the edema promptly disappeared, and with it the waking air hunger at night.

The air hunger of diabetes and chronic nephritis will not be discussed, because they have been very much in evidence in medical literature for the last few years. Nor will any space be given to hysterical air hunger or the common neurosis of air hunger. There is, however, an interesting relation between air hunger and retention of body fluids that is sometimes seen in chronic cardiovascular disease. The real source of the air hunger is marked by the presence of symptoms that are likely to lead to an interpretation of blood stasis as the cause, when there is a perfectly competent volume flow of blood through the lungs. The patients have cardiac enlargement and retention of body fluids, two symptoms that are sure to make stasis an acceptable explanation for the air hunger. Retention of body fluids in old heart and vascular disease cannot always be explained as being the result of a failure of blood hydraulics or of renal incompetence. There are some cases in which the retention of body fluids can be explained only by some systemic change that binds the fluid to the body cells and does not release it to the circulating blood. This seems certainly to be the way in which retention of body fluids occurs in myxedema, for the patients may have no cardiac, vascular or renal symptoms, and the administration of thyro-iodine causes a brisk diuresis while the patient is rapidly restored to normal health. We do not understand the biologic chemical changes at the bottom of these symptoms or their recovery; nor do we understand the biologic process that causes the binding of water to the body cells in some cases of cardiovascular disease. So far as we can determine, there may be an adequate volume flow of blood, and the kidney proves to be quite competent to eliminate the water that is offered it by the renal circulation, but there is general anasarca.

When in chronic cardiovascular disease we find a warm body surface with general anasarca, air hunger and periodic breathing, we should not readily dispose of the whole problem as due to stasis and renal incompetence. There are good reasons for suspecting that the retention of body fluid is not due to either a lessened output of the heart or to renal incompetence. It is not questioned that insufficient output and renal incompetence from lessened volume flow through the kidney will adequately explain a large proportion of cases.

Improvement follows the use of some digitalis or theobromine preparation, and as the dropsy recedes the cardiectasis diminishes and the rate and volume of the pulse improve. But there are cases in which digitalis and caffeine in large doses are ineffectual, but with the administration of merbaphen (novasurol) by the intravenous method the dropsy recedes, air hunger ceases, and the pulse pressure, heart rate and size of the heart's chambers are unchanged. There is nothing demonstrable that enables us to say that the heart's output has been enlarged, and if this is true then the brisk diuresis cannot with any more reason be ascribed to an enlarged volume flow through the kidney than with the use of thyro-iodine in myxedema.

What reasons have we for saying that the release of the retained fluid is due to some chemical effect on the binding relations between body cells and the water of dropsy? The reasons are as follows:

The body surface is not cool and the proportion of heat loss by way of the lungs is the same before and after the diuresis. The volume flow, as estimated by Stewart's method, is the same before and after the dropsy has ceased. The volume of the heart is unchanged, so far as we can determine by locating its boundaries before and after the diuresis, but there are good reasons for believing that after the diuresis the heart is more competent, although its output is the same as before. How merbaphen serves as a diuretic is unexplained, but we can show that it is not due to any effect on the mass movement of blood, and there is no evidence to indicate a local effect on the kidney itself. Furthermore, there is no evidence to indicate that the retained water is bound to the proteins of the blood in such a manner that it cannot be released to the kidney filter. By exclusion, therefore, we are left only the idea that the water is bound to the body cells and is not released to the circulating blood. We have the analog of this conception in the retention of water in myxedema. The mystery is no greater in one instance than in the other, and the diuresis that follows the use of merbaphen is no less astonishing than the diuresis that follows the use of thyro-iodine in cases of myxedema.

All this argument is derived from the simple observation that there are occasional instances of air hunger attendant on dropsy in old cardiovascular disease in which the respiratory symptom is traceable to retention of fluids that cannot be accounted for by failure in the hydraulics of the circulation, and also that this pathologic condition should always be suspected when the body surface is warm, although cardiovascular disease lies at the bottom of all the symptoms. In such cases, therapy directed toward improvement of the cardiac output and to conservation of the kidney is futile, but in many such cases we are rewarded with a brisk diuresis and cessation of air hunger following the intravenous use of merbaphen.

ETHYL IODIDE METHOD FOR DETERMINING THE CIRCULATION

AS A FUNCTIONAL TEST OF THE HEART[*]

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An ideal function test of the heart should correlate the clinical condition of the patient with the amount of work he can do, and the amount of effective work the heart can do.

All too little attention has been given to a quantitative estimation of the work the patient can do and, when quantitative figures are obtained, the unmeasurable energy expended in maintaining the upright position is usually neglected. One of us (J. W. M.) has designed an ergometer that can be used while the patient is in the recumbent or semirecumbent position. This apparatus eliminates the waste of a rather large and variable amount of energy in maintaining posture, and is suitable for bedridden patients.

By effective work of the heart is meant roughly, the mean blood pressure in grams per square centimeter times the output of the heart in cubic centimeters. In cases of regurgitation or stenosis, the heart will of course do more work than will be shown by this formula, but, since this work is not physiologically effective in terms of the circulation, it need not receive our attention at present. Blood pressure is, of course, easily estimated, but much difficulty has been met in estimating the output of the heart in normal and pathologic human subjects.

The methods of approach more generally used at the present date for calculating the volume of the circulation per minute (the output of the heart) are (1) the application of the principle of Fick and (2) the calculation from the amount of some foreign gas taken up by the blood in a given time when the coefficient of distribution between air and blood is known.

The application of the Fick principle to man, with the various technics proposed by Haldane,[1] Henderson and Prince,[2] Burwell and Robinson,[3] and Field, Bock, Gildea and Lathrop,[4] is not altogether suitable for routine use. The difficulty lies mainly in procuring the actual amount of gases in the mixed venous blood during the various states of disease and activity of the human body. Then, too, the technic of many of the methods based on the Fick principle is laborious and time consuming, thus rendering their usefulness unlikely as a routine procedure.

The measurement of circulation with foreign gases apparently offers the ideal method of approach. Henderson and Haggard[5] use the term nonreacting gases for gases that enter and leave the blood by simple diffusion and are not changed during their stay in the tissues. Reacting gases on the other hand, are gases that are changed or decomposed in the body. Methods of calculating the circulation by means of nonreacting gases so far proposed have involved the determination of the concentration of the gas in the mixed venous blood. This rather uncertain procedure has rendered unacceptable the results obtained by the use of nitrous oxide and similar substances.

In June of last year, Henderson and Haggard reported a method of determining the circulation involving the use of ethyl iodide. This method is described as simple, accurate and reliable. Its simplicity rests on the assumption that the "substance is decomposed so nearly completely in the tissues of the body that the amount in the venous blood, returning to the lungs, may be taken as virtually zero." The simplicity rests further on an easy method of taking alveolar air, which involves no cooperation on the part of the subject. The reliability and the accuracy of the method depend on the correctness of the estimation of the ethyl iodide vapor by the use of the iodine pentoxide train.

It was not our idea in the beginning to scrutinize the accuracy of the ethyl iodide method, but rather to accept it. We found early in our work, however, that the circulation in normal resting individuals, determined by the ethyl iodide method, was much higher than that determined in the same individuals by the Fick method. This led us to investigate the method as thoroughly as we knew how, with the hope of straightening out some of our worst difficulties.

In the first place, using the formula of Henderson and Haggard,

$$\text{Circulation} = \frac{\text{inspired ethyl iodide} - \text{expired ethyl iodide}}{\text{alveolar ethyl iodide}} \times \frac{\text{respiration}}{2}$$

it can be seen that if we wish to calculate the circulation within a plus or minus error of 10 per cent, it is necessary that the analysis of the ethyl iodide show an error of less than plus or minus 2.5 per cent, or at least that the figures for the various samples used in the determination of a single circulation be proportional to the actual ethyl iodide content of the samples within these limits of error.

Whereas the analytic method of Henderson and Haggard is accurate, we have found difficulty in reducing the limits of error to the foregoing necessary standards. This difficulty will undoubtedly be eliminated with further experience.

We then made a study of the alveolar air as collected in the manner described by Henderson and Haggard, which involves an ingenious way of mechanically trapping the last of successive normal respirations. We found that this method gave carbon dioxide figures considerably lower than those given by the Haldane-Priestley method. The valve designed by Henderson and Haggard and supplied to us by the manufacturers has a dead space of 80 cc. It was thought that, by eliminating this dead space as far as possible, the discrepancy between the true and sampled alveolar air could be reduced to a negligible amount.

One of us (W. F. H.) designed a valve whose dead space is 7 cc. (fig. 1). Samples taken with this valve, the Henderson and Haggard procedure being used, were lower in carbon dioxide than the true alveolar air, unless the tidal air was at least from 550 to 600 cc. The samples, then, even with a valve having a small dead space, cannot be trusted during rest, unless the tidal air is carefully watched and controlled. During exercise and certain dyspneas, on the other hand, this method affords, possibly, the most convenient means of collecting alveolar samples.

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[*] Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Haldane, J. S.: Respiration, New Haven, Yale University Press, 1922.

[2] Henderson, Yandell; and Prince, A. L.: J. Biol. Chem. **32**: 325 (Dec.) 1917.

[3] Burwell, C. S., and Robinson, G. C.: J. Clin. Investigation **1**: 87 (Oct.) 1924.

[4] Field, H., Jr.; Bock, A. V.; Gildea, E. F., and Lathrop, F. L.: J. Clin. Investigation **1**: 65 (Oct.) 1924.

[5] Henderson, Yandell; and Haggard, H. W.: Am. J. Physiol. **73**: 193 (June) 1925.

In order to collect a large (250 cc.) sample of true alveolar air quickly and with a minimum of cooperation on the part of the patient, we evolved the following procedure (fig. 2): A tube was connected from the respiratory channel between the valve described above and the mouthpiece to a water manometer (*M*). This gives indications of the phases of respiration. At the signal "blow" given during expiration, the subject empties his lungs as quickly and completely as possible. During the following inspiration, the operator opens the cock (*A*) and distilled (acidulated for carbon dioxide) water flows into the reservoir (*C*), thus drawing alveolar air from the tube (*T*) into the bulb (*B*). Experiments show that it is possible to get as much as from 40 to 50 cc. of alveolar air at a time, thus filling the bulb in five or six "blows." Large samples taken in this way check exactly in carbon dioxide content with the ordinary Haldane-Priestley samples, as would be expected from the nature of the procedure. Care was taken to eliminate overventilation by too frequent "blowing."

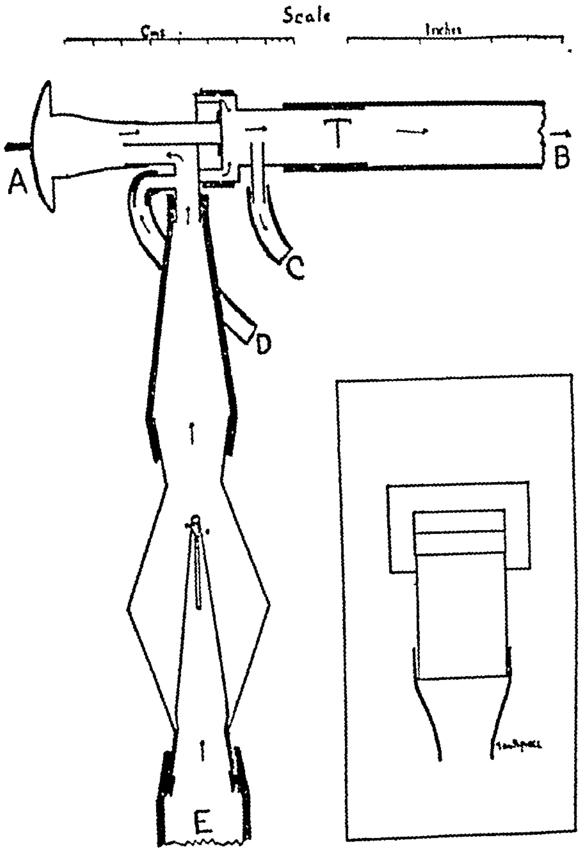

Fig. 1.—Detail of valve for taking alveolar air: *A*, mouthpiece; *B*, expired air; *C*, to sampling tube; *D*, to water manometer; *E*, inspired air from spirometer; inset, another view of valve showing width.

The alveolar ethyl iodide figures are distinctly lower when the sample is taken in this manner and, as a consequence, the calculated figures for a normal resting individual are higher than the Henderson and Haggard figures. From the evidence in the literature, contradictory as it is, one is inclined to doubt that the Henderson and Haggard figures are too low. They may be too high. Our ethyl iodide circulation figures are distinctly higher than our Fick figures. This led us to a consideration of the Henderson and Haggard figure for the distribution coefficient of ethyl iodide between alveolar air and blood. The distribution coefficient, according to these authors, is 2. This means in the terms of our experiments that there is twice as much ethyl iodide in a liter of arterial blood as in a liter of the alveolar air. This figure was arrived at by analyzing blood and air, to which it had been equilibrated for ethyl iodide. Now it takes from three to ten minutes to draw blood from the aerotonometer and to anlayze it for ethyl iodide. It is plain that this procedure must be rigorously justified when we remember that the whole method depends on the assumption that ethyl iodide is completely destroyed during the thirty to sixty seconds it takes the blood to leave the lungs and return again. This is further emphasized by the consideration that Henderson and Haggard have shown that there is no ethyl iodide in the abdominal air when the subject is inhaling the substance. Since the abdominal air is known to be in gaseous equilibrium with the arterial blood, this finding might be interpreted to indicate that the ethyl iodide does not diffuse readily from the blood stream to the tissues. It is difficult to see how this interpretation can be excluded, and, if correct, leads to the conclusion that the blood, rather than the tissues, acts as the major destroyer of ethyl iodide. We are of the opinion, as shown below, that the published distribution coefficient of ethyl iodide is too low.

The assumption that ethyl iodide is destroyed during the first circulation is of course fundamental to the method and is an assumption that seems to us to be incompletely justified by the evidence presented by Henderson and Haggard. Our modified method of sampling alveolar air enabled us to test this assumption directly. It was shown, by proper controls, that the subjects were not giving off, in their alveolar air, combustible substances that affect the iodine pentoxide train. The subject then inspired 100 liters of ethyl iodide air, during which time an alveolar sample was

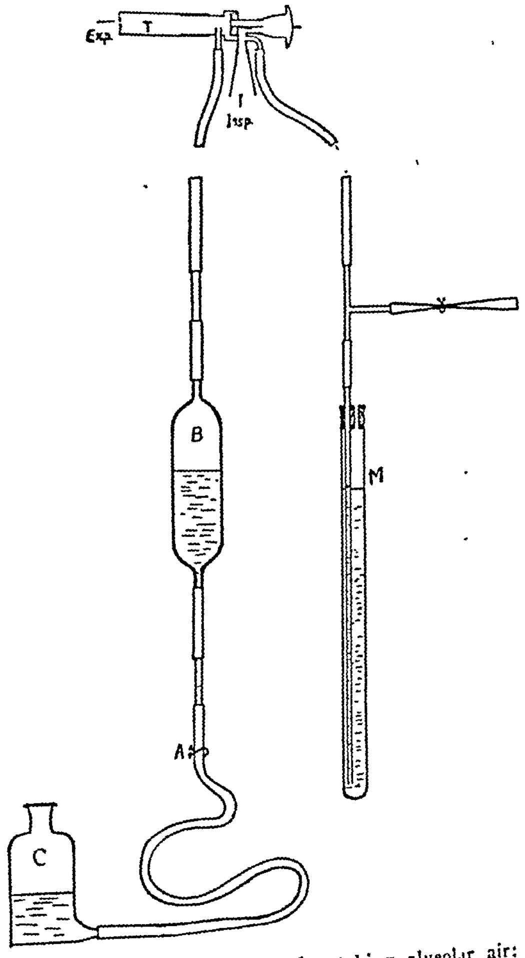

Fig. 2.—Connections of apparatus for taking alveolar air: *M*, water manometer; *A*, cock; *C*, reservoir; *T*, tube; *B*, bulb.

taken. He was instructed to inspire and expire room air deeply from ten to fifteen times, for the purpose of ventilating all the inspired ethyl iodide out of the lungs. A thoroughly cleansed respiratory valve and tube were then used to take a sample of the alveolar air which could get ethyl iodide only from the venous blood returning to the lungs. The figures determined by the iodine pentoxide train for normal and cardiac patients (resting and working) are given in table 1.

It is obvious that exercise lowers the oxygen tension in the tissues and venous blood. In all probability, when the oxygen tension in the tissues is low, the destruction of ethyl iodide is less rapid than when this tension is high. The possibility that the quicker circulation of the exercising subjects might leave less time for the destruction of ethyl iodide cannot be significant in this connection, because the elapsed time between the commencement of room air ventilation and the taking of the alveolar ethyl iodide air samples was the same in the two sets of experiments.

Another line of evidence, which indicates that the low tissue oxygen tension interferes with the destruction of ethyl iodide and hence distorts the calculation of the circulation, is as follows:

During a ten minute period of exercise, ethyl iodide samples were taken between the fourth and fifth minute with our modified method of sampling and between the fifth and tenth minute, with Henderson and Haggard's method of sampling and the "circulation" calculated from their ethyl iodide figures. The values are given in table 2.

During rest in normal individuals the "circulation" remains constant from time to time, because the ethyl iodide is destroyed as fast as it comes in.

Table 1.—*Ethyl Iodide Concentrations in Alveolar Air During and After Inhalation of Ethyl Iodide*

Ethyl Iodide Units in Alveolar Air	Ethyl Iodide Units in Alveolar Air after Inspiring and Expiring Room Air From 10 to 15 Times
Normal Resting	
17.3	8.6 (at end of successive minutes, 5.8, 5.5)
18.0	4.3 (at end of successive minutes, 3.7, 4.9)
18 0	8.0 (at end of successive minutes, 4.8, 5.0, 3.8, 4.1)
14.0	5 3 (one minute later, 4.0)
9.7	3.8
12.3	6.5
14.8	6.0
13.2	7.8
16.0	6.9
Normal Working	
23.3	10.4
25.4	13.8
24.8	15.0
34.0	16.3
Cardiac Resting	
18 0	7.6
20.7	8.9
33.2	7.2
Cardiac Working	
27.9	13.2
29.5	18.1

Now, should it be true that the figures obtained by the iodine pentoxide train represent ethyl iodide decomposition, then ethyl iodide comes back in the venous blood to the lungs in heavy concentration, and since these concentrations seem to vary with the metabolic state of the subject, it is plain that the application of the Henderson formula to the ethyl iodide figures of inspired, expired and alveolar air gives us a number that pertains more to the rate of destruction of ethyl iodide than to the rate of the circulation. It would hardly be possible to reduce the figure for ethyl iodide taken up by the arterial blood by subtracting that found in the venous blood and thus calculate the "circulation" from the amount of ethyl iodide that goes into the blood from the alveolar air.

This is true, because the ethyl iodide does not all leave the blood as it passes through the lungs, for it is in equilibrium with a fairly high tension in the alveolar air. This tension persists for at least four minutes after we have ceased administering ethyl iodide. During this time, the blood has made a complete circulation several times. The formulas available for "nonreacting gases" are, of course, ruled out.

Table 2.—*Ethyl Iodide "Circulation" Figures During Rest and Work*

Resting Circulation

Subject	Fick (Bock's Technic)[4] Liters per Minute	Ethyl Iodide Liters per Minute
L. R. (normal)................	4.5	6 83
L. O. O. (normal)............	4.78	6.22
R. C. (cardiac)................	....	2.36

Working Circulation

	Between Fourth and Fifth Minute			Between Fifth and Tenth Minute		
Subject	Work per Minute	Circulation per Minute	Alveolar Ethyl Iodide Units	Work per Minute	Circulation per Minute	Alveolar Ethyl Iodide Units
L. R. (N)....	376 Kg. m.	10.7 L.	24.8	302 Kg. m.	11.9 L.	34.7
L. O. O. (N)	446 Kg. m.	20.2 L.	25.0	460 Kg. m.	11.6 L.	34.0
R. C. (C)....	111 Kg. m.	10.6 L.	26.8	118 Kg. m.	3.5 L.	34.4

Using Henderson and Haggard's distribution coefficient between alveolar air and blood, subtraction of the venous concentration raises the circulation figure in direct proportion to the ratio of the alveolar concentration to the figure obtained by subtracting the venous from the alveolar concentration. To get reasonable figures, therefore, the distribution coefficient would have to be increased.

This would seem to indicate that the method will have to be worked over in a very critical manner to make it applicable to the determination of the circulation in various metabolic conditions.

Throughout our work, we have used certified calibrated Haldane-Henderson gas analysis apparatus for determining oxygen and carbon dioxide, and iodine pentoxide powder supplied to us by Dr. Haggard of Yale University. Following Dr. Haggard's suggestion of using an electric coil for heating the iodine pentoxide tube, we made use of a thermoregulated electric oven.

CONCLUSION

The ethyl iodide method for determining the circulation will have to be revised, as combustible substances, probably ethyl iodide, seem to return in the venous blood to the lungs.

ABSTRACT OF DISCUSSION

ON PAPERS BY DRS. PRATT, HOOVER, AND MOORE, HAMILTON AND KINSMAN

Dr. G. Canby Robinson, Nashville, Tenn.: The results that Dr. Moore has reported regarding the ethyl iodide method of Henderson and Haggard are very disappointing to all of us who have been interested in the problem of measuring the cardiac output. This is a very important measurement; and if a method can be devised and applied to the study of patients, it is sure to give valuable information regarding disease and the action of drugs. All those interested hailed the appearance of this method with much interest, and immediately it was put on trial by several workers in the field.

The results, as far as I have been able to gather by personal communication, have been the same as those reported by Dr. Moore. A number of workers have failed to get satisfactory results by this method, so that we are thrown back on the principle of Fick, which Dr. Moore mentioned. The principle of Fick was enunciated as long ago as 1870, but it has only been in the last few years that the application of physical chemistry to biologic problems has allowed us to use it in the study of output of the heart. The principle is a very simple one; it states that if we can measure the amount of oxygen utilized each minute by the body, such as we do in the estimation of the basal metabolism rate, and if we also estimate the amount of oxygen given up by each unit of blood as it passes through the capillaries, then we can calculate the amount of blood necessarily put out by the heart each minute in order to carry through the body the necessary oxygen. In other words, if the body is consuming 300 cc. of oxygen each minute and if it is taking 5 cc. out of every 100 cc. of blood, it is necessary that 6 liters of blood be put out by the heart; that is, by each ventricle each minute. Dr. Burwell and I have attacked this problem and have worked out a method by which the output of the heart can be measured accurately in man. Recently this has been applied to the study of experimental animals, and several of the workers in my department are carrying out now a series of investigations on the output of the heart under varying conditions. Their work has brought out some interesting points; for instance, they have shown that digitalis administered to animals in doses comparable to those used in man produces diminution in the output of the heart, often as much as 25 per cent of the original output. These results have a very definite bearing on the digitalis problem and indicate the value of the results that we can expect from exact measurements of the cardiac output. Unfortunately, at present the method is not readily applied to the study of patients, but it is hoped that an accurate method may be found soon so that the output of the heart may be measured in various diseases.

Dr. M. D. Levy, Houston, Texas: It has been said that without the clinical laboratory modern medicine could hardly exist, but there is still a place for clinicians. I think Dr. Hoover's paper has especially shown us the value of this very simple costal movement that Dr. Guthrie has spoken of. Several years ago Dr. Hoover first described that movement of the costal margin resulting from flattening out of the diaphragm. Our experience with it with even the sophomore students in diagnosis was most gratifying. After demonstration of the phenomenon to them they were fairly proficient in recognizing conditions producing that change. The first case that he mentioned in which we have a combination of findings, and by laying on of the hands and simple observation entirely straightening out and analyzing that case, I think, was an extremely eloquent sermon for all of us to observe our patients more closely than we have been doing. In the complete paper, Dr. Hoover mentions several cases of paroxysmal tachypnea, I think six cases in all, one case associated with a marked cardiac involvement. Twelve or thirteen years ago, while I was an intern in St. Louis, there came to the hospital a negro from the lead works, suffering from symptoms of lead poisoning, constipation and lead line, with stippling of the cells. While in the ward at the hospital, he had several attacks of marked slowing of the heart down to 14, 16 or 18 a minute, with a respiratory rate up to 56, a complete transposition of the pulse and respiratory rates. This was very slight in effect on the patient. The nurse, on noticing the change, became much more alarmed than the patient himself. Under large doses of atropine the patient apparently recovered and in a few weeks went out apparently well. Our knowledge of the pathology and physiology of this was not clear, but we thought it was due to some little change in the vagus nerve, probably the result of the lead itself.

Dr. George Piness, Los Angeles: I do not believe that such conditions as described by Dr. Pratt should be termed asthma. As we understand asthma it is usually an obstruction, expiratory in character, while the patients described by the author gave no evidence of respiratory obstruction. The cases seen by myself with the usual history of sudden awakening with fear and apprehension of impending death, inability to get air and rushing to the window and attempting to get air, have usually proved on careful examination to be myocardial in character and usually have some decompensation. In the advanced cases described by Dr. Pratt there is usually some evidence of edema with a passive congestion, such as enlargement of the liver, and a few moist râles at the bases. The difficulty in differentiating this condition from a true bronchial asthma should not be great because the average asthmatic gives a definite history of expiratory dyspnea and not inspiratory, and the attack usually is of longer duration than so-called cardiac asthmas as described by the author. The cases described by Dr. Pratt are usually found in persons past the fourth decade of life. I have never seen one in a person under that age. The prognosis is usually bad, although I have had several patients under my care who have lived past the duration described by Dr. Pratt. Epinephrine usually does not give relief, while morphine quiets them down and makes them quite comfortable. I agree with Dr. Hoover that this should be termed hyperpnea instead of cardiac asthma.

Dr. Joseph H. Pratt, Boston: In all my cases that I have classed as cardiac asthma the patients did have actual dyspnea in the sense in which Dr. Hoover employs the word. Those patients that I saw in attacks had difficulty and distress in breathing. It was an inspiratory dyspnea, if my observations were correct. Sir William Osler and Dr. Longcope have observed attacks of cardiac asthma in which the dyspnea was expiratory. Sir James Mackenzie states that in attacks that he witnessed, the type of breathing was exactly like that seen in bronchial asthma. Mackenzie believed that in cardiac asthma, as in ordinary bronchial asthma, a spasm of the muscles of the bronchi exists. Dr. Piness is, I think, making the common mistake of confusing the severe dyspnea of advanced heart failure with the form of paroxysmal dyspnea that is known as cardiac asthma. He speaks of the frequency with which he has seen these cases in the hospital ward. Attacks of cardiac asthma are rarely seen in any hospital ward, but severe cardiac dyspnea is, of course, common. He also referred to the enlarged livers in the cases he has seen. I have never seen or read of a case of undoubted cardiac asthma associated with enlargement of the liver (passive congestion). It is interesting that evidence of failure of the right heart as shown by enlargement of the liver has been lacking in all cases. The available evidence points to a failure of the left ventricle during the attack of cardiac asthma. An elevation of the blood pressure is characteristic of the severe paroxysms, as I have stated in the paper. If the left ventricle is weak why should the arterial blood pressure rise? Dr. Canby Robinson found in his studies that in acute failure of the left ventricle its output of blood was increased, and this he thinks may lead to an elevation of the blood pressure.

Dr. Charles F. Hoover, Cleveland: Dr. Levy describes a case of paroxysmal tachypnea that occurred in a man who had lead poisoning. I have never seen this symptom in any other lesion than mediastinitis. All my patients had either syphilitic or tuberculous mediastinitis. The first case to come under my observation was that of a man who had syphilitic disease of the aorta and heart. One of his paroxysms developed as I was palpating his pulse. The heart rate suddenly went from 80 to 40 a minute, and then after several cycles of the slowed heart rate the respiratory rate rose from 20 to 60 a minute. The attack ceased in about ten minutes after the hypodermic injection of 1 mg. of atropine sulphate. Atropine was then given as a routine, 1 mg. twice daily, and there was no recurrence of the attacks. Antisyphilitic treatment was then commenced and the paroxysms did not return, although the atropine was discontinued after three days' administration. In response to inquiry, these patients say they have not the sense of air hunger with which they are familiar. They have a "feeling of constraint across the upper chest and then comes an irresistible impulse to breathe very rapidly." The only experimental work that I can find which throws any light on this subject is the work of Baglioni, who found in the dog that excitation of the pulmonary branch of the vagus causes arrest of the heart beat and very rapid small respiratory excursions which are taken with the lungs in the inspiratory phase. This is what happens in some cases of tachypnea, but all do not have the slowed heart rate. In fact, out of five cases only one had bradycardia with the paroxysmal tachypnea.

AN EPIDEMIC OF UNDETERMINED NATURE: DENGUE?*

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There occurred on Cape Cod, Massachusetts, during the summer of 1925 an epidemic of mild nature, characterized by the following symptoms, physical condition and course: generally a sudden onset with a rapidly rising temperature; pain of varying degree located in the abdomen, limbs, back, and especially over the lower ribs, increased by normal breathing; headache, chiefly about the eyes; general malaise; occasionally chilliness but never a "chill"; occasionally vomiting; rarely sore throat; never convulsion; an indefinite physical examination; persistence of these symptoms for a short time, varying from twelve or eighteen hours to one or three days, then remission of fever and general symptoms in turn lasting from twelve to thirty-six hours, followed by a "second peak" of temperature and recurrence of the same symptoms but less severe in character; final subsidence of the temperature to subnormal, with the patient considerably prostrated and entering on a slow convalescence prolonged out of proportion to the severity of the acute stages.

The epidemic began early in July, spread quite rapidly, reaching its peak in about two weeks; then began slowly to decline, finally disappearing early in September. Our patients resided in a narrow strip of territory, stretching about 16 miles along the eastern shore of Buzzards Bay.

We saw fifty cases in all: twenty girls, nineteen boys, seven women and four men. There is a preponderance of children, but in the summer population of Cape Cod there is a general preponderance of children. A striking feature of the epidemic was its family nature: in each of eight families there were from two to eight cases following one another in rapid succession. The onset was generally sudden, at times like a bolt literally "from the blue," coming as it often did while the child, apparently well, was playing on the beach, bathing, sailing, or awakened out of a sound sleep at night. It generally took the form of a sudden sharp pain located at the epigastrium; e. g., a child was seized with such a pain at 11 a. m. while out sailing, arrived at our office at 1 p. m., and showed on examination only a distressed sick look, suppressed breathing, chronically enlarged tonsils, and a temperature of 101.4 F.; less frequently the pain was located over the lower ribs on one or both sides. When the onset was gradual, it took the form of general malaise, chilliness, and "aching all over."

The subsequent course of the malady was as described above, perhaps the most striking features being its "diphasic" character, the debility, and prolonged convalescence. The absence of respiratory symptoms and signs, coryza, cough, bronchitis, pleuritic friction rubs, was also striking.

Laboratory studies, except in special cases, were of little significance. The urine was normal in all but three cases, two showing a slight temporary albuminuria with a few hyaline casts, the third a temporary lighting up of a postinfluenzal nephritis which had occurred in April, 1925. Bacterial studies of the throat made in eleven patients showed only ordinary mouth bacteria. Blood examinations made in fifteen patients showed nothing uniformly characteristic; polymorphonuclear leukocytosis was the rule both in the first and in the second stages of fever, the range of the total counts being from 9,000 to 21,000. A leukopenia was observed in only four patients.

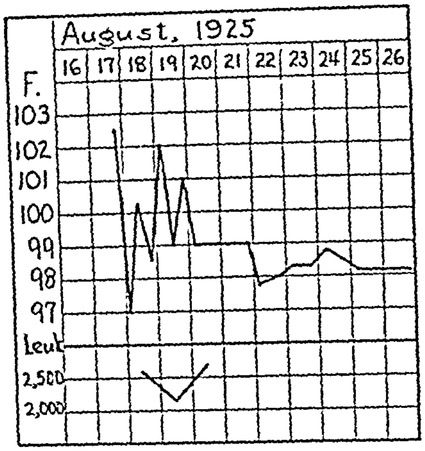

Chart 1.—Temperature and leukocytes in case 1.

MOSQUITOES

The report on four different groups of mosquitoes caught in August and sent to the Army Medical Museum at Washington showed the presence of *Aedes fitchii, vexans, sollicitans* and *cantator,* and *Culex pipiens,* ordinary woods and salt marsh mosquitoes not known to be disease carriers. Also, on August 25, Dr. Joseph Bequaert, from Harvard Medical School, collected larvae and pupae and found only *Aedes sollicitans* and *Culex pipiens.*

The following histories illustrate the nature of the epidemic.

Case 1.—A woman, aged 35, seen, August 17, complained of general pains and malaise, headache and chilliness, all persisting through the next day. At 8 p. m. examination revealed: temperature, 102.5; pulse, 120; respiration, normal. Acetylsalicylic acid was given. Profuse sweating occurred five hours later, the temperature dropping (chart 1).

Leukocytes in Case 1

	Total	Neutrophils	Lymphocytes	Large Mononuclears	Transitionals	Eosinophils	Basophils
August 20..........	2,600	24%	73%	2.0%	0.0%	0.0%	1.0%
September 12......	7,800	46%	3.%	18.0%	2.0%	.....	.....

August 19, the patient was comfortable yesterday, but during the night was restless, vomiting, and having severe pain in the back, limbs and lower ribs. The temperature rose to its second "peak" at 4 a. m., August 19. "Break-bone fever, all right," remarked the patient at the morning visit.

August 24, there was slight jaundice. Subsequently there was slow convalescence for four or five weeks, with normal temperature but slow pulse, from 60 to 65.

Laboratory examinations of the throat and urine were negative. There was leukopenia throughout both acute stages: 2,600 in the initial stage, 2,200 and 2,800 in the recurrent stage, rising during a prolonged convalescence to only 7,800, four weeks after onset. The differential formula is also striking: during the recurrent stage, a marked increase in the lymphocytes up to 73 per cent at the expense of the neutrophils (24 per cent); during convalescence, a sluggish change of these two types of cells to 34 and 46 per cent, respectively, the large mononuclears meanwhile rising from 2 per cent to 18 per cent.

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* Read at the meeting of the American Pediatric Society, June 2, 1926.

Three successive groups of mosquitoes caught inside and outside the house proved to be *Aedes sollcitans* and *A. cantator.*

Case 2.—A girl, aged 13, seen, August 11, complained of pain between the scapulae, vomiting, chilliness, fever and headache. The face was flushed; the eyes and conjunctivae were injected; the throat was red. The temperature was 104; pulse, 120; respiration, 20, easy. The throat and urine were normal. Leukocytes numbered 7,400.

With the drop in temperature, August 12, came marked improvement in the patient's general condition *throughout the 12th and 13th;* on the evening of the 13th, there was recurrence of the headache, and pain between the scapulae. The rise of temperature reached its second "peak" at noon, August 14, then subsiding to subnormal, together with a slow pulse and general feeling of listlessness. There was convalescence of two weeks.

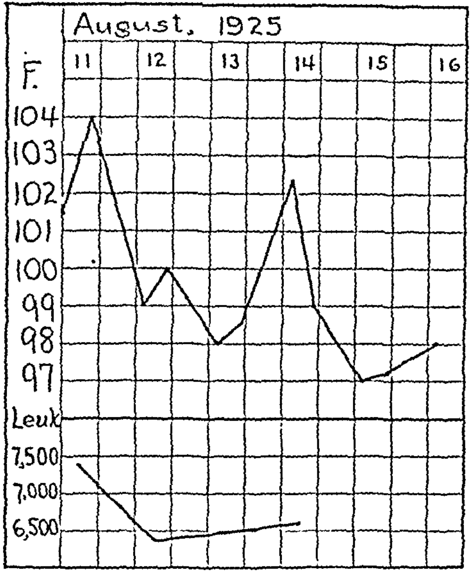

Chart 2.—Temperature and leukocytes in case 2.

Leukocytes in Case 2

	Total	Neutrophils	Lymphocytes	Large Mononuclears	Eosinophils
August 14......	6,600	71%	23.5%	2.0%	1.5%

Cases 3, 4 and 5, in a mother and two children, are examples of the house nature of the epidemic. It started with the cook, a mild case, not seen by a physician.

Case 3.—The mother had a mild attack, beginning, August 3, in early morning, coincidently with the illness of her son (patient 4), with general malaise, lasting twenty-four hours. The condition improved, but the illness recurred, with the second "peak," August 5, and later convalescent debility and subnormal temperature. There was leukocytosis in both febrile stages.

Case 4.—The son, aged 14 years, was affected similarly to his mother, but with the second stage more severe than the first, epigastric pain worse when he laughed, and a leukopenia of 4,600, as contrasted with a leukocytosis of 20,000 at the onset, *five days before.*

Leukocytes in Case 4

	Total	Neutrophils	Lymphocytes	Mononuclears	Transitionals	Eosinophils	Basophils
August 3	20,000	61.4%	29%	3.1%	2.5%	2.0%	2.0%
August 8	4,600	24.0%	70%	2.0%	2.0%	2.0%	0.0%

The leukopenia as well as the characteristic epigastric pain did not develop until the recurrent stage. The similarity of this striking blood picture to that of case 1 may be noted: low neutrophils, high lymphocytes. Convalescence was slow.

Case 5.—A vigorous woman, aged 19, presented a "sluggish" case. Gradual onset occurred, August 1, with a tired feeling, slight pain in the neck and shoulders, "diphasic" course, normal and slightly increased white count during the first and second acute stages, respectively, and on the eighth day a general "slump": marked lassitude, subnormal temperature, pulse and leukocytes (chart 3). Heart action was normal except for the remarkably slow rate. This state of affairs continued for two weeks, at the end of which time, though still not of normal strength, she had resumed her normal life, barring vigorous exercise.

Cases 6, 7, 8 and 9, in a mother and three sons aged 12, 8 and 6, respectively, represent another family group of cases.

Cases *6 and 7.*—The mother and 12 year old son came down coincidently at 2 a. m., July 28, each with severe epigastric pain, nausea and vomiting in the son but none in the mother, symptoms suggesting the evening meal as the cause. These patients evidently were infected at the same time and probably infected patient 8, succumbing, August 3, who in turn infected patient 9, attacked, August 10, the incubation periods being six and seven days, respectively. The illness in the 12 year old son ran a characteristic "diphasic" course, the chief feature being the persistence of a dull, aching pain in the left side with finally, not until the ninth day, development of a pleuritic friction rub, the only case of the series in which this physical sign was detected.

Case 8.—The 8 year old son had a short, mild, "diphasic" course, with sudden onset, August 3, at the family hour of 2 a. m. The unusual features were the far greater severity of the abdominal and thoracic pain during the recurrent stage as compared with the first stage, rigidity of the right side of the abdomen, and temporary absence of both knee-jerks.

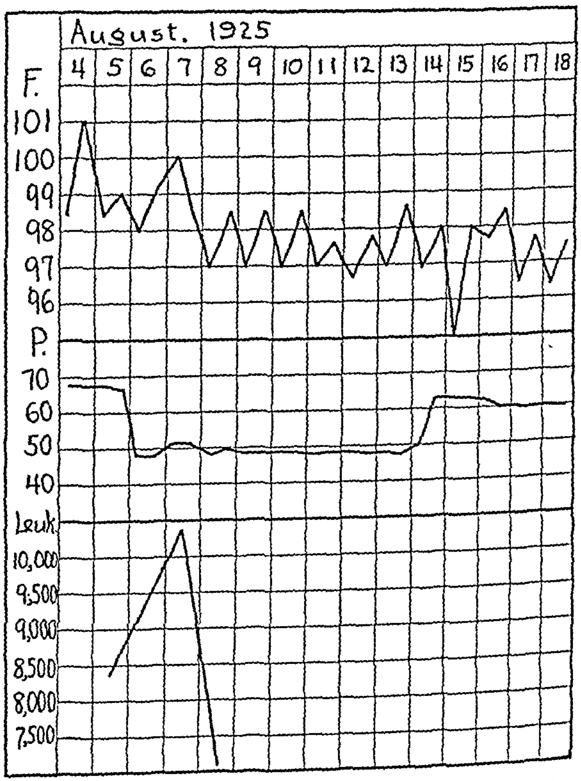

Chart 3.—Temperature, pulse and leukocytes in case 5.

Case 10.—A girl, aged 3 years, had a mild attack, beginning August 6 at 4 a. m., with "stomach ache" and a temperature of 103; the bowels were normal. Examination at 10 a. m. showed a reddened throat, enlarged tonsils, and over the chest a faint erythematous rash suggestive of scarlet fever. The leukocytes numbered 11,200; there were slight albuminuria and a few hyaline casts, August 12; the urine was normal, August 20. The rash disappeared in twelve hours; there was no desquamation.

This was the only case of the series in which any rash was observed; its occurrence, the coincident reddened throat and subsequent *albuminuria,* of course, suggested a mild scarlet fever; there had been no exposure, however, and no case of scarlet fever occurred in the colony throughout the summer.

Cases 11, 12 and 13 and cases 14 to 22 represent two more groups of family cases occurring in persons living in neighboring houses. In the first group, the illness started about July 12 with the mother, and from her spread to her nursing, 6-weeks old baby. The latter was taken suddenly sick, July 15, with severe crying, apparently in pain, and a temperature of 102. Examination showed only marked pallor of the face; the throat was red; the extremities were blue and cold. Respiration was 40, with an expiratory grunt; temperature, 102; pulse, 156. July 16 the patient was better, though now there were râles at both bases posteriorly; from that time on the patient improved and recovered entirely. She was the only seriously sick patient in this whole series.

DIAGNOSIS

The exact nature of this malady is by no means clear. Certain possibilities suggested by the symptoms, as pneumonia, appendicitis and other abdominal conditions, malaria, scarlet fever and streptococcal sore throat, all were excluded early in the epidemic. There remain for consideration only three conditions: influenza, "pleurodynia" ("devil's grip"), and dengue.

Influenza.—There was little resemblance to epidemic influenza in these cases; the summer season, the sudden onset, the sharp localization of the pain, the absence of respiratory signs, were unlike any picture of influenza that we have observed either in army or in pediatric practice. Too much weight cannot be given to bacteriologic studies of the throat, but it may be mentioned that of twelve deep throat cultures taken during the epidemic only one showed *B. influenza;* her brother's culture was negative; neither of these cases was clinically like the epidemic cases, and neither is included in the series. Of the remaining eleven cultures, all were negative, all were clinically of the prevailing epidemic type. We may exclude influenza.

"Pleurodynia" and Dengue.—"Pleurodynia" is a term applied to a symptom complex occurring in epidemic form and heretofore observed only in the summer season of the temperate zone. Dabney[1] described such an epidemic occurring in Virginia in 1888; recently, Hangar, McCoy and Frantz,[2] Payne and Armstrong,[3] Greene[4] and Torrey[5] have studied epidemics of the same nature in Philadelphia, New Jersey and New York City in 1923 and 1924. The symptoms observed by us in the present epidemic are essentially identical with those described by these authors, and we may for the present regard it as another instance of "epidemic pleurodynia" occurring for the third successive summer in the north temperate zone.

But "pleurodynia" means "painful side" and is a symptom or rather group of symptoms due probably to a diaphragmatic pleuritis. Is it a clinical entity as heretofore maintained or is it a manifestation of a specific, already classified disease? As one studies these epidemics they suggest a tropical malady, dengue: the latter is defined as "a noninfectious disease of low mortality, frequently epidemic, confined to warm climates, due to a filter-passing organism conveyable by *Aedes (Stegomyia) fasciata,* and characterized by an abrupt onset, headache, aching eyes, severe body and limb pains, anorexia and sometimes vomiting, a variable and usually "diphasic" febrile course of from three to eight days, frequently a relatively slow pulse, leukopenia, and a late rash—and often by prolonged convalescence."[6]

"Pleurodynia" corresponds closely with this definition both in its epidemiology and in its clinical features: The manner of its spread is still unknown; apparently it is not contagious; in our own epidemic it was not conveyed by the respiratory route; food could not be incriminated, too many sources of milk and water supply being involved; there were no intestinal excreta to spread it; weather conditions did not vary materially from the mean on Cape Cod for the last seventy-five or eighty years. Spread by insects seems the most probable explanation. Mosquitoes were unusually prevalent and thick in the affected area during the summer, and conveyance of a poison or virus by them must be considered. Small[7] found in the blood of two of Torrey's three pleurodynia patients a protozoan organism closely resembling *Plasmodium malariae* in its cyclic development and suggests that it be called *Plasmodium pleurodyniae.* The analogy to malaria strengthens the suspicion of a mosquito-borne disease. Small's observation, however, as he himself points out, is a limited one and needs confirmation.

The clinical histories of our cases correspond to the description of dengue, but with differences in certain respects: the pain, the rash and the leukocyte counts. The pain was like that of dengue in being general yet unlike in its sharp localization over the thorax and at the epigastrium; a rash is reported in about 80 per cent of cases of dengue constantly under observation; it was detected in only one of our cases; but as this sign is notoriously apt to be slight and evanescent in the former disease, it may well have escaped notice in our patients, seen only once a day for a few days. The leukocyte count in dengue is variable, normal or slightly increased counts occurring during the first few hours of an attack of dengue, the tendency toward a leukopenia, low neutrophils and high lymphocytes becoming more marked as the disease progresses (as in case 4 of our series). "It appears, then, that leukopenia is by no means a constant or necessary feature of this disease, and its absence cannot be regarded as negativing the diagnosis of dengue."[8] On the whole, in view of the marked variability of the clinical picture of dengue emphasized by all students[9] of the disease, the differences thus cited in the cases of the present epidemic might well fall within those variations, especially as the patients were living in the temperate zone.

But epidemiologic and clinical resemblance between diseases does not constitute proof of their identity; laboratory data are often necessary to determine this. We have definite laboratory facts concerning dengue: we have no such information about pleurodynia; in the former it is known that the disease is produced by a filtrable virus conveyed by the stegomyia mosquito;[10] in the latter disease no blood examinations for a virus have been made, no mosquito work has been done. We therefore have no definite knowledge of the possible relation of these two conditions to each other; further study is necessary to determine this.

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[1] Dabney, W. C.: Am. J. M. Sc. **104:** 488, 1888.

[2] Hangar, F. M.; McCoy, C. C., and Frantz, A. M.: An Epidemic of Mild Fever of Unknown Nature, J. A. M. A. **81:** 826 (Sept. 8) 1923.

[3] Payne, G. C., and Armstrong, Charles: Epidemic Transient Diaphragmatic Spasm, J. A. M. A. **81:** 746 (Sept. 1) 1923.

[4] Greene, D.: Arch. Pediat. **41:** 322 (May) 1924.

[5] Torrey, R. G.: Am. J. M. Sc. **168:** 564 (Oct.) 1924.

[6] Cleland, J. B.: Practice of Medicine in the Tropics, edited by Byam and Archbald, 1923.

[7] Small, J. C.: Am. J. M. Sc. **168:** 570 (Oct.) 1924.

[8] Siler, J. F.; Hall, M. W., and Hitchens, A. P.: Results Obtained in Transmission of Dengue Fever, J. A. M. A. **84:** 1163 (April 18) 1925. Philippine J. Sc. **29:** 304, 1926.

[9] Castellani and Chalmers: Manual of Tropical Medicine, ed. 3, 1919, p. 1244. Coleman, T. D., in Nelson's System **2:** 106-112, 1920. Chandler, A. C., and Rice, L.: Am. J. Trop. Med. **3:** 233 (May) 1923. Siler, Hall and Hitchens (footnote 8).

[10] Cleland, J. B., and Bradley, B.: J. Hyg. **16:** 317, 418, 1918. Harris, W. H., and Duval, C. W.: J. Exper. Med. **40:** 817 (Dec.) 1924. Siler, Hall and Hitchens (footnote 8).

The repeated occurrence in the temperate zone of a disease so closely resembling dengue, heretofore observed only in the tropics, raises anew the question as to the method of conveyance of the dengue virus. The only proved[8] carrier of this virus, the stegomyia mosquito, does not exist at the latitudes where these epidemics of pleurodynia have been observed: 40°, 40° 45′, and 41° 30′ N., respectively; either these cases are not dengue or there is more than one carrier of the latter's virus. If such an additional carrier exists, it is presumably a mosquito and a species found in abundance in both the tropical and the temperate zones; such a species is *Aedes sollicitans,* the only one of those found by us in the present study likewise existing in the tropics. It is widespread, has never been suspected of transmitting disease, and consequently has never been so tested.

We believe that in future epidemics of pleurodynia, biting experiments should be carried out with both the *Aedes sollicitans* and the stegomyia mosquitoes, that the blood of patients should be examined for the dengue virus and for *Plasmodium pleurodyniae,* and that the possible spread of dengue through *Aedes sollicitans* as a carrier should be investigated. At present, lacking the information which these studies would give, we do not feel that we can exclude a diagnosis of dengue in the epidemic described in this paper.

TREATMENT

The treatment was simple and directed chiefly to the relief of pain: bed; baths, tepid or cold according to the wish of the patient; extreme heat or extreme cold locally; strapping the chest; and drugs in the shape of acetylsalicylic acid, acetphenetidin or quinine were all tried with varying degrees of success. The convalescent stage required attention; bed for at least forty-eight hours of a continuous, normal or subnormal temperature after the second febrile stage; quick resumption of sea bathing in the warm waters of that region even for those who had had albuminuria, and gradual resumption of other outdoor activities.

SUMMARY

An epidemic of a febrile disease occurring on Cape Cod at latitude 41° 30′ N. during the summer of 1925 was characterized by a sudden onset, by severe pain most frequently located over the lower ribs and at the epigastrium, by a short course, by an irregular remitting fever, frequently by a "diphasic" type, by negative physical examinations, by prostration and by slow convalescence.

The most important part of the treatment was a not too rapid resumption of the child's summer activities.

Similar epidemics in the temperate zone have been infrequently described before and classified as a distinct entity under the term epidemic pleurodynia.

It is suggested that these epidemics may be due to the virus of a tropical disease, dengue, the clinical picture being modified by climatic conditions of the temperate zone.

In future epidemics, intensive studies should be made on the relation of mosquitoes to these cases of pleurodynia.

FOCAL INFECTION FROM THE LABORATORY STANDPOINT *

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Despite the fact that the subject of focal infection has been prominently before the medical profession during the past decade, a good deal of confusion and skepticism of its importance still exists. One ordinarily thinks of only the acute bacterial infections and especially of the specific infections and contagious diseases in relation to infection, but it has been estimated that from 80 to 90 per cent of all deaths are due to some type of infection, and the acute specific infections are in reality responsible for but a small part of these. To not a few physicians the subject of focal infection begins and ends with the possibility of a deforming arthritis being related to infected teeth or tonsils, the removal of which may or may not be followed by a magical disappearance of the joint involvements. But the possible importance of simple nonspecific infections of the apexes of the teeth, the follicles on the tonsils, the accessory nasal sinuses and infection in general of the upper and lower respiratory tracts as well as to a lesser extent of the intestinal and genito-urinary tracts, in relation to the infection of more distant tissues, as the synovial linings of joints, the sheaths of nerves and muscles, the eye, heart, kidneys, gallbladder, biliary ducts and other organs, including even a large number of the psychoses and neuroses, as well as possibly to some of the toxic effects ascribed to the administration of arsphenamine and mercury and especially exfoliative dermatitis and allied conditions, has been properly emphasized, although conclusive bacteriologic evidence of the relationship may be lacking in many instances, our knowledge of the mechanism incomplete, and our means of exact diagnosis sometimes quite inadequate.

From the bacteriologic and immunologic standpoints, many interesting and important questions arise which time and space do not permit of detailed discussion. What types of infection are especially important as primary foci? What organisms are of especial importance in relation to focal infection? Are the secondary foci due to the presence of the organisms themselves or only to their toxins? How are these transported to distant tissues in the production of secondary foci? Does focal infection necessarily imply or demand a specific tissue affinity on the part of the organisms or a peculiar susceptibility of the tissues? Why are some persons subjected to the second lesion of focal infection, while others escape with presumably worse primary foci? What can the laboratory do in the way of aiding diagnosis and treatment in a practical and satisfactory manner? These are some of the numerous questions which I shall attempt to discuss in a brief and concise manner.

According to my experience, infections of the apexes of the teeth, the nasal accessory sinuses, tonsils and bronchi are the most important primary foci in adults. Even in some of those cases of gallbladder and bile duct infections believed to be secondary foci, I believe that infections of the upper respiratory tract are of primary importance, followed in sequence by secondary infection of the intestinal tract and of the biliary passages through the swallowing of purulent material, or possibly by direct blood stream infection of the liver. Likewise, in that difficult group of arthritis cases believed to be due to organisms or their toxins absorbed from the intestines, the possibility of primary foci in the upper respiratory tract and mouth first engages our serious attention, although it is apparently possible for some of the bacteria of the normal intestinal flora to produce secondary infections and notably pyelitis by the colon bacillus. The genital organs, and particularly infections of the prostate gland and adnexa, are especially important in relation to the production of gonococcus arthritis, tenosynovitis and endocarditis, although the frequency with which staphylococci and occasionally even streptococci are to be found in chronic urethroprostatitis suggests that these organisms, rather than the gonococcus, may be responsible.

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* Read before the College of Physicians of Philadelphia, May 5, 1926.

But of all the organisms believed to be responsible for focal infection, the group of streptococci are undoubtedly most important followed in order by the staphylococcus, pneumococcus, gonococcus and colon bacillus. *Streptococcus hemolyticus* and *Staphylococcus pyogenes-aureus* have certainly been of primary importance in my experience, especially in relation to focal infections of the teeth, gums and respiratory tract, particularly of the nasal accessory sinuses. But the possible importance of the organism of influenza and probably even of the diphtheroid bacilli in relation to focal infection is to be kept in mind, as well as some of the specific infectious organisms, such as the tubercle and typhoid bacilli and the spirochete of syphilis, from the standpoint of establishing primary foci from which distant organs may become secondarily infected.

Whether or not the secondary lesions of focal infection are due to the actual transference of the organisms themselves or only to their toxins cannot be definitely answered. It is ordinarily believed that the arthritis and tenosynovitis of focal infection are due to the presence of the organisms; and the frequency with which they are found in blood cultures in endocarditis leads to the same conclusion. But the question has been frequently raised whether the iritis, optic neuritis and other ocular diseases of focal infection are due to the presence of bacterial toxins absorbed from the primary foci or to the organisms themselves. Altogether too frequently, ophthalmologists throw away the bits of iris removed during iridectomy instead of subjecting them to culture, preferably in a medium of hormone glucose broth; but it is my opinion that these and the secondary foci in general are due to the presence of the organisms themselves rather than to their toxins absorbed from the primary focus. But the possibility of bacterial toxic substances alone producing the secondary lesion of focal infection is not to be underestimated, especially in relation to the psychoses and neuroses, in which, in the opinion of McCarthy,[1] they appear to produce symptoms with greater frequency in persons with arterial hypotension probably of endocrine unbalance. Furthermore, the soluble proteins of bacteria absorbed from primary foci may be responsible in part for allergic sensitization, especially in relation to bronchial asthma, nervous rhinitis and some of the skin diseases, particularly exfoliative dermatitis following the administration of arsphenamine and its congeners.

The distribution of organisms and their toxins would appear to be largely by the blood. Absorption into the lymph draining the primary focus probably is of first occurrence and alone responsible for secondary foci situated in the direct line of drainage; but distribution to more distant organs is almost certainly by way of the blood stream. In this manner the question of the bactericidal and antitoxic qualities of the blood may be important factors in determining whether or not secondary infections occur, as in all probability these are prevented in many instances by a destruction of bacteria or a neutralization of their toxic products by the blood, even though these immunologic agents may be ineffective in the sterilization of the primary foci.

In case the blood is unable to destroy organisms finding their way into it, what governs their subsequent localization in distant organs and tissues? Does this necessarily demand that the organism shall acquire in the primary focus a specific elective affinity for a particular organ or tissue? Or does it mean that the organism or its products circulating in the blood encounter widespread immunologic resistance in all but those tissues or organs of secondary localization? Or is localization to be explained on anatomic grounds in which the process is favored by sites of reduced resistance due to trauma in a broad sense, disturbances of circulation with closed capillary areas, and embolism? In my opinion the importance of acquired selective tissue affinity on the part of the organism has been greatly overemphasized, as I believe is true of the so-called specific neurotropic and dermotropic strains of *Spirochaeta pallida* in relation to localization in syphilis secondary to the primary lesion or chancre. Indeed, the theory of acquired elective affinity on the part of bacteria in relation to focal infection and the difficulty or impossibility of its demonstration by animal experiments may be one factor responsible for the skepticism of physicians regarding the importance of focal infection in the production of disease, and in my opinion it is not at all necessary to believe in this theory in relation to the subject. I am particularly impressed with the importance of general virulence of the organism, local tissue immunity, hereditary influences and trauma in a broad sense as the determining factors, although space does not permit here a detailed discussion of them.

In my opinion these agencies also largely determine why some persons are more prone to secondary focal infections than others. The persons showing the largest shadows or areas of cavitation and radiolucence about the apexes of the teeth are not always the ones showing secondary localizations or lesions of focal infection. Indeed, as stated by Price,[2] the occurrence of these areas of rarefaction may be interpreted as evidence of a good local reaction and a high immunologic defense against systemic infection, with well marked bactericidal activity of the blood sufficient for protecting against secondary infections until these immunologic agencies are broken down by some kind of systemic overload, among which intercurrent acute infection, anemia, undernutrition, hypotension, endocrine unbalance and a reduction of ionic blood calcium may be of importance.

Unfortunately, organisms may survive in the blood long enough for their transference to distant tissues and organs, even though they may not be able to multiply in the blood and thereby produce the clinical evidences of bacteremia or septicemia. But the matter of secondary localizations or lesions in focal infection involves not only the virulence and numbers of organisms gaining access to the circulating blood, but likewise the kind and degree of local resistance about the primary focus or foci, the degree of systemic humoral and cellular resistance, and the question of predisposition to secondary infection by anatomic defects and the presence of areas of inherited or acquired reduced tissue resistance.

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[1] McCarthy, D. J.: The Influence of Focal Infections, J. A. M. A. 85: 1949 (Dec. 19) 1925.

[2] Price, W. A.: Dental Infections and Related Degenerative Diseases, J. A. M. A. 84: 254 (Jan. 24) 1925.

Finally, what may the laboratory do in aiding the diagnosis of focal infection? Reliable cultures may be taken of extracted teeth, infected sinuses, tonsils, the secretions of the respiratory tract, and prostatic secretions. The finding of streptococci, especially the hemolytic and viridans types, is always of considerable significance, as likewise the presence of *Staphylococcus aureus* and the pneumococcus. But the laboratory can do little beyond these cultural examinations; and bacteriologic studies of the secondary foci, such as those in the iris and other parts of the eye, the joints and sheaths of the muscles and nerves, are usually impossible although far more important in clinching a diagnosis of focal infection than an investigation of the primary foci. The one exception is the detection of bacteria in the blood in septic endocarditis and especially of streptococci, although even this may require several attempts and careful attention to technic before positive results are obtained. Certainly, merely finding streptococci, staphylococci or pneumococci in the crypts of the tonsils or secretions of the respiratory tract does not establish the existence of focal infection, and the same may be said of bacteriologic examinations of the feces; but the finding of these and other organisms in cultures of closed spaces such as apical abscesses, the sinuses and the gallbladder are of much greater significance because, by proper attention to technic and detail, secondary contaminations may be reduced to a minimum or entirely excluded.

But even when organisms are recovered from primary foci under acceptable conditions, can their relationship to secondary focal lesions be proved? In the first place, the instrumentation necessary, as the extraction of a tooth, enucleation of a tonsil, curettage of a sinus or administration of an autogenous vaccine, may be followed by an exacerbation of the secondary foci, and such are always strong presumptive evidence of a relationship between the foci of primary and secondary infection. Determining the virulence of the organism for the rabbit or other lower animal may be of aid, as likewise the question of elective localization of the organism in the corresponding organs of this or some other suitable animal possessing a reasonable degree of susceptibility. But the absence of virulence and the absence of evidence of elective localization of the bacterium in the healthy lower animal does not exclude the possibility of its being responsible for focal infection in the sick human being. On the other hand, the demonstration of virulence and elective localization is strong presumptive evidence in favor of regarding the organism as the etiologic agent, although even here the matter of localization in the lower animal need not always involve the question of acquired selective tissue affinity on the part of the bacterium.

Is a measure of the immunologic resistance of value? Unfortunately, a determination of the bacterial activity of the blood is not always to be accepted, because, in my opinion, the blood of a patient capable of preventing the growth of bacteria in the test tube may not prevent the establishment of primary foci of infection, or kill off the organisms during the intermittent and probably fleeting periods of bacteremia during which the organisms are being transported to distant tissues and organs. But a bactericidal blood test along the lines developed by Cohen and his associates is of value in estimating the chances of a generalized blood infection from a primary focus, even though of limited value in relation to focal infection. In other words, it would appear that when the blood is bactericidal or bacteriostatic in vitro for an organism, the latter is incapable of producing a true septicemia, although, in my opinion, the blood may be unable to sterilize a localized focus of infection or to kill those bacteria gaining access to it for brief periods.

The laboratory may aid in the treatment of focal infection by the careful preparation and administration of autogenous bacterial vaccines. If one could be sure that the secondary foci are maintained by constant infection from the primary foci, the removal of the latter would be all that is essentially required in treatment. Unfortunately, the infection may be so well established in the secondary foci that removal or drainage of the primary lesions has little or no direct influence on recovery. For this reason, drainage or extirpation of the secondary foci may be of equal importance; but when this cannot be done, it is sound practice to include the careful administration of a properly prepared autogenous vaccine as part of the treatment in an attempt to aid in the walling off or eradication of the secondary bacterial deposits. Even in cases without clinically detectable secondary foci, especially apical abscesses and chronic sinusitis, it is sometimes wise and well to include the administration of from four to six doses of autogenous vaccine for prophylactic purposes in aiding the eradication of clinically latent or undetectable secondary lesions.

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RETRODISPLACEMENT OF THE UTERUS DURING PREGNANCY AND THE PUERPERIUM

AN ANALYSIS OF ONE THOUSAND PRIVATE CASES *

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Every study of any considerable number of cases has shown that approximately 20 per cent of women have retrodisplaced uteri. The importance of retrodisplacement as a pathologic entity has been overemphasized, and there can be no doubt that far too many operations are being done for its correction. That it has some influence in the causation of sterility and of abortion is true, but this is much less than is commonly believed, and is made use of to too great an extent as a reason for retrodisplacement operations. We do not intend in this report to discuss the operative treatmet of retrodisplacement. We shall deal only with the question of retrodisplacement during pregnancy and the puerperium. This report concerns only a series of private patients. Ward patients have been excluded from consideration. We desire to show the incidence and management of retrodisplacement in women who are not subjected to the necessity of hard work and who have had careful prenatal observation. The lesser frequency of backward positions among these women may, we believe, be ascribed at least partially to these conditions.

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We have examined the histories of 1,000 private cases in order to ascertain the number of women who had retrodisplaced uteri when first seen, and the number who had retrodisplacement after labor, either as a recurrence of a backward position known to have existed before, or as a newly acquired retrodisplacement.

We have as a routine ascertained in all cases of pregnancy, unless the period of gestation was so far advanced at the first visit that the uterus had already risen out of the pelvis, whether the uterus was retrodisplaced or not. In all cases in which a retrodisplacement was found, subsequent examinations have been made, in order that we might know whether the uterus had spontaneously corrected its position and risen above the promontory. It is extremely important that one should know this, as incarceration of the uterus below the promontory must inevitably lead to abortion or to serious discomfort or possibly danger to the prospective mother.

In women who gave no history of abortion, either primiparas or multiparas, our rule has been to do nothing to the retrodisplaced uterus. We have assured ourselves primarily of its mobility, and thereafter by periodic examinations determined that it had risen out of the pelvis or that it was prevented from doing so by the promontory. Should the latter event occur, or appear likely to occur, the uterus has been manually corrected. For this, manual reposition has ordinarily sufficed. Where this has failed, the maneuver of Schulz is used, the posterior cervical lip being grasped with tenaculum forceps, on which traction is made, while with the vaginal fingers pressure is made upward on the fundus. As soon as the fundus passes the horizontal plane the cervix is pushed backward, the tenaculum removed, and the fundus is pushed forward by one hand abdominally while the other keeps the cervix back. In the majority of cases this simple means suffices. After this a pessary of suitable size is placed, to remain until the uterus is too large to reenter the pelvis. The woman is asked to remain in bed two days and is given one-half grain (0.03 Gm.) of codeine at once and another in the evening. These maneuvers are usually done in the afternoon or late forenoon.

Table 1.—*Series of Private Patients*

Total number		1,000
Retrodisplacement during pregnancy or puerperium		188, or 18.8%
Primiparas	86	
Multiparas	102	

Should the procedure just described fail to correct the position, we attempt again to correct it, this time in the knee-chest position, the vagina being filled with air. Pressure may be made on the fundus vaginally, or, should it seem that pressure applied at a higher level than is possible vaginally may be of use, it may be done rectally. If rectal pressure is made, one should be careful not to use force enough to injure the rectal mucosa.

In one case observed recently, after both dorsal and knee-chest position and vaginal and rectal manipulation had failed, it seemed that reposition under anesthesia should be tried. Prior to doing this, the woman was asked to assume the knee-chest position several times a day, and she was carefully shown what the knee-chest position meant. After four days she returned with the uterus in normal position.

Should all attempts fail, an attempt at correction under anesthesia may be made. In this series we have not had to resort to that expedient.

It would seem that the manipulation which is sometimes needed to correct the position of the pregnant uterus might cause abortion. In the series now reported, we have had but one instance of this. The pregnant uterus is tolerant of trauma to a degree that is sometimes trying when an urgent reason exists for emptying it. This is no reason, however, for being other than as cautious and gentle as possible. Manual reposition is needed in about 30 per cent of the cases of retrodisplacement of the pregnant uterus.

Table 2.—*Time of Retrodisplacement*

Retrodisplacement during pregnancy	55
Retrodisplacement at 12th day post partum	59
Retrodisplacement 8 weeks post partum	114, or 14.4%

Our opinion, based on the series of cases here reported, as well as a larger number which preceded this series in the practice of one of us, is that retrodisplacement is a far less important cause of sterility than is commonly believed. We have, indeed, seen cases in which correction of a retrodisplacement and the maintenance of the uterus in anteflexion for a time has been followed by pregnancy; but these have been few. One such is under the care of one of us as this report is written. It may be said, therefore, that sterility from this cause may occur but that it is decidedly not the rule. It is entirely proper, if other and more effective causes of sterility have been excluded, to correct the uterus manually and to maintain its anteflexed position by means of a pessary for a few months, with the hope, rather than the expectation, that pregnancy will occur. This will give the woman the satisfaction of knowing that this possibility has not been neglected. It is not proper to operate for the surgical correction of a retrodisplacement, to relieve sterility, when no other reason for the operation exists. The retrodisplacement as a possible cause for sterility may just as effectively be excluded by pessary treatment for a few months. Particularly should such operations not be done without thoroughgoing efforts to discover the actual cause of the sterility, including an investigation of possible male as well as female causes. That we have no prejudice against operation where indicated is evidenced by the fact that, included in a considerable amount of operative gynecology which we constantly do, are a reasonable number of operations for retrodisplacement. Our attitude toward operations for retrodisplacement at any time is a conservative one.

Retrodisplacement is frequently charged with being the cause of abortion. This is undoubtedly true in a small proportion of cases. We have seen a number of women in whom one or more abortions have occurred, who have successfully gone through pregnancy when their retrodisplaced uteri were held in anteflexion by a pessary until the growth of the uterus rendered a resumption of the backward position impossible. We have also seen at least as many who aborted in spite of such precautions. It would appear that, although retrodisplacement may operate as an occasional, not particularly frequent, cause of abortion, its importance as a causative factor should not be overestimated.

Certainly, operations for the correction of retrodisplacement should not be frequently done for the purpose of preventing abortion.

Prevention and correction of retrodisplacement in the puerperium is an important part of practical obstetrics. Some supervision of the process of involution is quite fairly a part of the obstetrician's activity. Our plan is as follows: On the third day the woman is allowed a back rest at a low elevation. This facilitates gravity drainage from the uterus. She is also asked to lie on her face twice daily for ten minutes at least each time, or oftener and longer should she care to. If engorgement of the breasts renders this very uncomfortable, it is deferred a day or two. This causes the force of gravity for at least a short time to cause the uterus to fall forward. It also helps to dispose of the lochial pool at the upper end of the vagina, which, in the face position, tends to flow out. This aids the process of involution, which is the process of restoring the uterus to its normal nonpregnant state. A proper involution is of distinct value in aiding the uterus to escape the abnormalities of the puerperium, of which retrodisplacement is one. On the tenth day she gets out of bed, and usually goes home on the twelfth. At the time of discharge from the hospital, an internal examination is made to ascertain the position of the uterus. This is done with gentleness in order to disturb the genital tract as little as possible. Should the uterus be found retrodisplaced, the woman is asked to assume the knee-chest position twice daily for at least ten minutes on each occasion. We assure ourselves that she knows what the knee-chest position is, either personally showing her how it should be done, or by having this done by a nurse who, we are certain, knows what the knee-chest posture is. Women who leave the hospital with retrodisplaced uteri are asked to return for examination in six weeks; others, in eight weeks. Should the uterus in six weeks still be retrodisplaced, it is reposited manually, and a pessary is given which is worn for eight weeks. Ten days after this has been put in she returns to allow us to see whether the uterus is held properly by it, again in a month, and finally in two months, at which time the pessary is removed. We regret that our follow-up in most cases does not extend beyond two months after labor. In a series made up wholly of private patients, it is not as easy to demand many visits over a long period of time. Again, the essential observations that must be made during pregnancy demand so much time that a limitation is placed on the number of women who can be seen for other purposes. Observation of a large number of pregnant women, conscientiously done, is a time-consuming task.

Of the 1,000 women whose histories form the basis of this report, it was found that 188, or 18.8 per cent, had retrodisplacement while under observation during pregnancy or the puerperium. Of these, eighty-six were primiparas and 102 multiparas. Of this number, forty-eight had been examined at some time prior to pregnancy. Thirty-one of these had a retrodisplacement, and seventeen were normal. In Lynch's report of 761 cases from the University of California Clinic, the incidence of retrodisplacement was 42.2 per cent. He states, however, that in a series of 100 private cases the incidence of retrodisplacement was 22 per cent. The frequency that we have found, 18.8 per cent, would therefore not differ widely from the frequency in his private patients. Apparently there is a greater likelihood of retrodisplacement in women who do hard work or who cannot have an adequate period of rest during the puerperium. The great majority of the women composing this series have been able to be relieved of stress during the first few weeks following labor, and very few have at any time done hard physical work. Involution should not be considered as complete until eight weeks have passed. It is reasonable to suppose that the heavy subinvoluted organ will be restrained with more difficulty by its supports from assuming a backward position than the uterus that has completely returned to its nonpregnant state. Our figures as to retrodisplacement in pregnancy probably do not show the whole number of women who had retrodisplacement in the first trimester. Forty per cent of our patients were seen after the uterus was sufficiently large to have risen out of the pelvis. Undoubtedly some of these had had retrodisplacement at the beginning of pregnancy. Could these be included, the number would be somewhat greater.

In fifty-five of our cases we had to deal with the retrodisplaced pregnant uterus. Only five of these patients complained of symptoms, in two cases spotting, in two cases bladder pressure, and in one case backache.

In sixteen of these cases, manual reposition and the use of a pessary were resorted to. In the remaining thirty-nine, the uterus spontaneously corrected itself. In all cases we assured ourselves by early and frequent examination of the mobility of the uterus, and of its ultimate assumption of the normal position. In most of them the knee-chest position was also used. In four of these cases, abortion occurred. In a series of fifty-five retrodisplaced pregnant uteri this is an incidence of abortion of 1 in 13.7. The usual quoted ratio of abortion to the total number of pregnancies is 1:5. Adair, whose studies of maternal welfare are probably as extensive as those of any one in this country, says that 1:3 plus is probably nearer the truth. So far, therefore, as such a limited number may show, it would not appear that a greater danger of abortion exists when the uterus is retrodisplaced. We do not insist on this, as the number of cases is too small. It agrees, however, with the impression which clinical work has given us, that retrodisplacement does not increase the risk of abortion provided an intelligent vigilance is maintained at all times with manipulative intervention carefully done when needed.

Table 3.—*Retrodisplacement During Pregnancy*

Total number	55	
Number complaining of symptoms		5
Spotting	2	
Bladder pressure	2	
Backache	1	
Number treated by reposition and pessary		16
Aborted	4	

It is important, should spontaneous correction of position not occur, that manual reposition be done before the uterus becomes so large that it is difficult to cause it to pass the promontory. Should correction not occur spontaneously, or be done manually, the increase in the length of the long axis of the uterus will eventually cause the cervix to be pressed against the bladder base and urethra, so that urination may be rendered impossible.

One of us has seen a woman, a patient of another physician, because of inability to urinate. The bladder was distended so that it rose to a point midway between the symphysis and the umbilicus. There was a retrodisplaced pregnant uterus of four months, incarcerated under the promontory with the cervix pressed firmly against the urethra, which it compressed against the symphysis. After the bladder had been emptied with a catheter, manual reposition was done and the woman went to term.

Of the fifty-five, forty-nine reappeared for examination eight weeks after labor. In thirteen of these, the uterus was in the forward position. Of these thirteen, eight were primiparas. An impression exists among the public, and to some extent among physicians, that pregnancy will cure retrodisplacement. Our opinion has been that this is an error. The observation just noted, however, would seem to indicate that in a very small proportion of cases this may be true. It should be noted, in considering this, that women who have had retrodisplacement during pregnancy have usually been advised, on leaving the hospital, even though the uterus should be in the forward position, to use the knee-chest position as a prophylaxis. This may have had an influence in causing these apparent recoveries.

Of the entire series of 1,000, there were fifty-nine who showed retrodisplacement on the twelfth day after labor. These were all advised as to the use of the knee-chest position. Twenty-four of them, on reexamination six or eight weeks after labor, showed the uterus in normal position. Of this group, then, 40 per cent were relieved by simple postural treatment. The importance of determining the position of the uterus at the end of the stay in the hospital would appear to be evident. The figures, also, seem to show that 6 per cent of women show retrodisplacement as early as the twelfth day.

The postural treatment of backward displacement in the puerperium is, then, of distinct value and should always be tried. We have used the simple knee-chest position exclusively. It is essential, as has already been emphasized, that it be properly done. We have tried, perhaps over too brief a space of time, the so-called monkey walk and other modifications of the knee-chest position. Theoretically, this exercise seems sound; but practically it has been difficult to get patients to make use of it. Even granting lesser efficiency for the knee-chest position, which we are not prepared to do, it would be better to employ a method which patients will use regularly rather than one which may be more efficient but which they will not carry out. There seems to be no doubt that postural exercises correct a considerable part of retrodisplacements following labor.

At the end of eight weeks there were 144 women who showed some degree of retrodisplacement. In only nineteen of these cases was there any definite complaint by the patient; that is, a complaint of sufficient degree to have been noted in the record. Nine of these complained of bleeding caused by subinvolution, and ten reported backache.

Not all of these were treated. Many women in whom the uterus was merely vertical, not inclining backward, were let alone. Again, in some instances in which the retrodisplacement occurred in multiparas who were known to have had retrodisplacement before without symptoms, and in whom involution had taken place satisfactorily, no treatment was instituted. If a woman is well and free from symptoms, our most important object has been attained. Compared with the well being of the woman, the presence of a forward or a backward position is of little moment, and many women pass through life with retrodisplacements from which they have no discomfort.

Reposition and the use of a pessary will relieve the great majority, at least for a sufficient period of time to allow of a satisfactory involution.

Eighty of the 144 seen at this time were actively treated. In seventeen of these eighty, permanent relief was not obtained, as was evidenced by examination at a later date. Pessary treatment therefore cannot be looked on as a permanent cure in all cases. Recurrence of retrodisplacement seems more likely in a woman in whom it existed before or during pregnancy than in one in whom the uterus was normally placed. However, involution will probably be better if the uterus is held forward while it is in progress, as the prevention of bending or kinking of the veins of the broad ligaments decreases the tendency to passive congestion of the uterus. Careful maintenance of the normal position is of importance during the puerperium and aids a complete return to the normal nonpregnant state. Pessary treatment at this time, while of value for the reason just named, does not in all cases provide a permanent cure. We are concerned at this time particularly with the retrodisplacement of pregnancy and the puerperium. The permanent cure of retrodisplacement by operation is outside the scope of this report.

Table 4.—*Observations at Eight Weeks Post Partum*

Number retrodisplaced			144, or 14.4%
Complaining of something	19		
Bleeding (subinvolution)	9		
Backache or pain	10		
Actively treated		80	
Manual reposition, pessary, known to fail		17	

CONCLUSION

1. About one woman in five in a series of private patients (18.8 per cent in this series) had retrodisplacement during pregnancy and the puerperium.

2. Retrodisplacement during pregnancy, provided an intelligent vigilance is exercised, need cause little trouble. In 29 per cent of those seen by us, reposition was done and the uterus retained by a pessary. In the remainder, correction ensued spontaneously.

3. Fourteen and four-tenths per cent show a backward position at eight weeks post partum. Reposition and retention in the anteflexed position aids the process of involution but does not invariably cure the displacement permanently.

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Health in the Tropics.—In the tropics, as a general rule, for the greater part of the year the temperature of the air practically eliminates radiation as a means of effecting heat loss from the body, so that we have to depend almost entirely upon the perspiration for this purpose. Perspiration, being a very active process, means that more energy is required to bring about loss of body heat than would be necessary if radiation could have been brought into action, because radiation, being purely a physical process, demands much less work from the body than is needed for the active secretion of the sweat. Here, then, is the first extra call upon your daily supply of energy. You may try to make a saving by adapting your clothing to the altered conditions with the object of assisting the skin in its work; but you can do really very little in this direction, and you are faced with the alternative of providing this extra energy from that allotted to your conscious activities or from your reserve. The latter course will surely lead to disaster.—J. Balfour Kirk.

POSTPUERPERAL MORBIDITY

A STATISTICAL PRESENTATION OF ONE THOUSAND CASES *

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With a view of stimulating the careful examination of the postpuerperal woman, I present a statistical study of 1,000 examinations made as soon as possible after the child was 6 weeks of age. The cases are taken consecutively from our files, only completed charts being used, and all cases being disregarded in which for any reason the data were insufficient to justify conclusions. A large majority of the cases represent material at the Elizabeth Steel Magee Hospital and my private service, charts being used even though the patient was first seen during labor or in the puerperal period provided the data were complete and they were found among the first thousand charts examined.

Table 1.—*Relaxation*

Nineteen per cent of all postpuerperal women have some perineal relaxation.

Slight relaxation giving good support—no symptoms		12%
Marked relaxation		6%
With vesicocele	2%	
With rectocele	4%	
Overcorrection of perineal injury causing functional discomfort		1%

Table 2.—*Cervix with Regard to Laceration*

	Per Cent
Small unilateral	64
Small bilateral	12
Deep unilateral	4
Deep bilateral	3
Small stellate	6
Deep stellate	1
Total	90

No special classification is made that takes into consideration the number of children born to the individual; my aim is to represent conditions as found in this group regardless of parity. The large majority are multiparas, and operative deliveries are charged if such a history was obtained.

Table 3.—*Degree of Erosion*

	Per Cent
Erosion appreciable only when the vault of the vagina is distended by spreading bivalve speculum	50
Erosion of moderate degree	14
Erosion marked, involving both anterior and posterior lips	6
Total	70

My own patients are not unfavorably influenced by the use of pituitary extract, which is prohibited during the labor; manual or instrumental deliveries are permitted only in the presence of fetal distress, uterine inertia, or disproportion. Perineums are repaired immediately, catgut being largely employed. In uncomplicated cases the patient is kept in bed until the fundus is in the pelvis. Vaginal examinations are made when the patient leaves the hospital, except in rare instances in which a known existing pathologic condition necessitates investigation during the early part of the puerperal period. No definite date is set for the patient's discharge. As a rule they leave the hospital about the fifth day after they are allowed out of bed.

All perineums are repaired immediately after delivery, on the theory that a perineal injury large enough to see is large enough to necessitate suture. In many cases in which the previous birth or births did not occur in the hospital, the patients quoted the attendant as having said that no laceration occurred but there existed a definite relaxation. Under the heading of slight relaxation I have reported every relaxation of the vagina, the majority having been sutured, although a few are noted as having a slight degree of relaxation when no injury was noted at time of birth.

Table 4.—*Cervical Injuries Showing Erosions and Eversions*

	Per Cent
Small laceration:	
No erosion or eversion	16
No erosion with eversion	1
With erosion, no eversion	59
With eversion	2
Deep laceration:	
No erosion or eversion	1
With eversion	2
With erosion, no eversion	1
With eversion	8
Total cervical injuries with erosions	70
Cervical injuries healed, no erosions or eversions	20
Total	90

Table 5.—*Method of Delivery in Cases Showing Cervical Injuries*

		Per Cent
Spontaneous deliveries (no pituitary extract)		74
Forceps deliveries:		
High	1	
Mid	2	
Low	6	9
Version elective on account of fetal distress or malpositions, etc.	2	
Version necessary on account of slight disproportion	5	7
Total		90

It is interesting to observe the conditions of the cervices. In a total of 90 per cent it was at least possible to tell that the cervix had been subject to some slight tearing at the time of labor. By small unilateral laceration I mean the cervix which on examination shows some widening of the os, with sufficient indentation to show definitely that some tear had taken place.

Table 6.—*Method of Delivery in Cases Showing Cervical Erosions*

Spontaneous delivery (no instruments or drugs)		*62%*
Pituitary extract used; full dilatation; uterine inertia; fetal *distress*; suspected gonorrheal infection		1%
Forceps, high	*1%*	
Mid	*2%*	
Low	*1%*	
Scanzonian maneuver	*3%*	*7%*
Total		*70%*

All patients were considered as having had varying degrees of erosions when, on examination with a bivalve speculum, the vault of the vagina being distended, an eroded area could be seen. Seventy per cent of women who had been delivered showed granulated areas, varying from the smallest possible size to a degree that involved the entire presenting part of the cervix. Only 20 per cent of cases showing laceration fail to show an accompanying erosion; and while it is undoubtedly true that some of these erosions would heal in time, it is also true that some of the milder erosions become well marked if an examination is made some months or years later.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

Table 7.—*All Retropositions (22 per cent)*

	Per Cent
Spontaneous deliveries	10
Instrumental deliveries	12
Afebrile puerperium	5
Febrile puerperium	17

Table 8.—*Malpositions of Uterus, Involution Complete*

Acute anteflexion		1%
Afebrile puerperium	1	
Febrile puerperium	0	
Retroposition		16%
Afebrile puerperium	5	
Febrile puerperium	11	
Retroposition and adhesions		5%
Afebrile puerperium	0	
Febrile puerperium	5	
Retroposition (frozen pelvis)		1%
Afebrile puerperium	0	
Febrile puerperium	1	
Total		23%

That the large majority of cervices are injured even in a spontaneous delivery is shown by the fact that 74 of the 90 per cent were delivered spontaneously and in the case of multiparas gave no history of the use of pituitary extract or operative delivery. In all forceps deliveries and all versions there was evidence of cervical trauma.

Table 9.—*Size of Uterus at End of Six Weeks with Relation to Temperature During Puerperium*

Subinvolution uncomplicated		5%
Afebrile puerperium	1%	
Febrile puerperium	4%	
Subinvolution with retroversion		16%
Afebrile puerperium	1%	
Febrile puerperium	15%	
Subinvolution with laceration and erosion of cervix		14%
Febrile puerperium	12%	
Febrile puerperium	2%	
Subinvolution with fibroid present		1%
Cases of subinvolution with spontaneous delivery, afebrile puerperium and no laceration or erosion		0%

Table 10.—*Remaining Kidney Impairments* *

	Per Cent
No symptoms during pregnancy	2
Enlarged palpable kidney during pregnancy	2
Enlarged palpable kidney during pregnancy:	
With palpable ureter	1
Without palpable ureter	1
Enlarged palpable kidney during pregnancy with clumped pus:	
No casts	6
With casts	1
Stones in kidney or ureter	2
Abscess of kidney necessitating removal	0.1

* Only 251 cases available Casts, granular or hyaline; clumped pus cells (catheter specimen); palpable ureter; enlarged, palpable or sensitive kidney with or without subjective symptoms.

Cervical erosions were found in spontaneous deliveries, but the percentage increases with intervention, as to both frequency and degree.

A total of 22 per cent of the women examined showed some malposition of the uterus. It is very noticeable that this malposition is definitely increased in febrile cases, 17 per cent of them representing febrile cases.

Febrile cases against afebrile cases show a very large increase of subinvolution. Of the 21 per cent found, 19 per cent represent cases in which there was some elevation of temperature during the puerperal period.

The data were incomplete regarding the remaining kidney impairments. A study of 251 cases disclosed some remaining impairment in 15.1 per cent.

CONCLUSIONS

1. Postpuerperal morbidity occurs much more frequently than is generally supposed. If evenly divided, every postpuerperal woman would be a sufferer in at least one particular.

2. A fully dilated cervix is one that is retracted over the fetal head and not one that is spoken of as dilatable.

3. Operative deliveries of any character seem to increase the postpuerperal morbidity, and are to be condemned even though we entirely disregard the immediate danger of infection, except where absolutely necessary to preserve the life of mother or child.

4. Temperatures during the puerperal period, even though slight, leave in their wake some definite evidence of injury having been done.

5. The now existing postpuerperal morbidity would seem to justify a return to rational nonintervention in the normal woman and the avoidance of all measures to hasten delivery, except in the presence of fetal distress, uterine inertia or disproportion.

6. Attention to cervical injuries will markedly lessen the discomfort of the patient, and in cases of erosion may have an influence on decreasing malignancy.

7. Postpuerperal examinations should be made after each delivery.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DANFORTH AND GALLOWAY, AND MILLER

Dr. Channing Barrett, Chicago: Papers of this kind furnish evidence to help mold or contradict the statement that a uterus can as well be in one position in the abdomen as another. There is no such thing as a normal retrodisplacement. I do not assert that a woman who has retrodisplacement cannot become pregnant; but whereas a certain percentage become pregnant, there is quite a percentage per- haps of retrodisplacement that would need some corrective position to help them to become pregnant. The great number of patients that become pregnant after correction of the posi- tion indicates that retrodisplacement and the conditions from which retrodisplacement develops are factors in sterility. When a patient becomes pregnant with retrodisplacement, she should receive careful attention until the uterus has gone forward and becomes too large to go into the backward position again. She should be seen often. The knee-chest position should be used until the position is changed by manual reposition, if possible; but that there are many patients with retrodisplacement who still become pregnant who have adhesions. In most patients the uterus can be got out of the retrodisplaced position and the patient go to term if cared for early, but a certain number will develop an incar- ceration if this attention is not given and there is a great degree of tolerance in regard to the uterus. One will stand much tolerance, another very little. It requires little incar- ceration to make one patient perform; another will go out in a term of four months with marked incarceration, and yet replacement at that time allows the woman to go to term.

colonies similar to those of *B. acidophilus* and *B. bulgaricus,* but develop considerable acidity in milk culture even when small inoculum is employed.

Attention is here called to the fact that considerable emphasis is laid by us on colony formation in the classification of these species. We believe that any organisms which do not in a measure at least approach the typical colony forms described should not be included among the species mentioned, regardless of other characteristics that they may have. In all of our isolation work with *B. acidophilus,* selections are made only from colonies such as have just been described.

The grouping of the cultures employed, with a brief history of each strain and summary of its characteristics, is given in the accompanying table.

All cultures included in the table ferment glucose, galactose and lactose, with acid production.

Cultures and Strains

Strain	Source	Colony	Levulose	Sucrose	Maltose
Typical B. bulgaricus Strains Employed in Experiments of Group 2					
Bn	Commercial culture	x type	0	0	0
B12	Department of Agriculture...	x type	0	0	0
B4	Department of Agriculture...	x type	0	0	0
B3	Department of Agriculture...	x type	0	0	0
G. V.	Human intestines	x type	0	0	0
Typical L. acidophilus Strains employed in Experiments of Group 3					
R-1-1	Rat	x and y type	Acid	Acid	Acid
4B	Rat	x type	Acid	Acid	Acid
Scav.	Human	x type	Acid∓	Acid	Acid
Intermediate Strains Employed in Experiments of Group 4					
B1	Department of Agriculture...	x and y type	0	+	+
B13	Department of Agriculture...	x type	0	0	+

The general procedure was the same for all experiments. Fecal platings were made before the feeding of the test culture began, and at intervals during the feeding period. Casein digest-milk powder-digest plus 1 per cent galactose was employed as the special medium, since this is adapted for colony growth of *B. acidophilus, B. bulgaricus* and closely related species. The results were not strictly quantitative. A heavy suspension of fresh feces was made in physiologic sodium chloride solution and loop-dilution agar plates made from this. Plates were incubated for forty-eight hours at 37 C., and the proportional numbers of *B. acidophilus* or *B. bulgaricus* colonies per plate determined. The milk cultures used for feeding were twenty-four hours old except when noted otherwise, and contained from 100 million to 500 million viable organisms per cubic centimeter.

At times the same subjects were employed in consecutive experiments, but in such instances a time interval was allowed between experiments until control platings of the feces showed no acidophilus-like colonies.

PRELIMINARY EXPERIMENTS, GROUP 1

The preliminary control experiments, in which whole sweet milk and *Streptococcus lacticus* soured milk were fed, had as an objective the determination of whether or not this type of diet over a comparatively short period could cause the development of any member of the *Lactobacillus* genus in the intestinal tract, as indicated by the fecal platings.

Eight normal persons (adults) drank 1 quart of whole sweet milk daily for a period of ten days. Fecal platings of six subjects made at definite intervals during the feeding and at its conclusion did not show any x type colonies. Satellite x type colonies were present on agar plates from the feces of two subjects. This peculiar colony development is found quite often in fecal platings. The tiny characteristic colonies are grouped around the colony of some other species, usually *Enterococcus,* in satellite formation. When transferred to milk, they do not as a rule develop. This type is apparently indifferent to any special feeding, as it may be found in fecal platings of some persons on an ordinary diet. It is deserving of further study. This species or type is so easily differentiated because of the peculiar colony arrangement that we feel its presence can be discounted in interpreting fecal platings when *B. acidophilus* or *B. bulgaricus* is fed.

While no exact record of defecations was kept during this experiment, seven of the eight subjects reported marked constipation at the close of the feeding period.

In the other experiment of this group, 1 quart of freshly soured *Streptococcus lacticus* milk was fed daily to seven persons for a period of ten days. No x type colonies developed in any fecal platings made during this feeding period. There was an increase in the numbers of streptococcus colonies on all plates. These were not *Streptococcus lacticus,* but probably *Enterococcus.* This conclusion is justified in that the organism fed grew very poorly at 37 C., its optimum being 24 C. All of the plates were incubated at 37 C. Furthermore, transfer of some of these colonies to sterile milk did not produce the typical *Streptococcus lacticus* curd at 24 C.; in fact, they barely developed at all at this temperature.

All subjects reported that bowel movements were normal; there was no tendency to constipation during this feeding.

GROUP 2 EXPERIMENTS

These group 2 experiments, six in all, constituted those in which a milk culture of typical *B. bulgaricus* was administered. One quart of a twenty-four hour *B. bulgaricus* milk culture containing approximately 250 million viable organisms per cubic centimeter was fed daily for periods varying from seven to ten days. The experiments of this group were not consecutive, but were usually separated by a *B. acidophilus* feeding. There were from four to eight subjects in each experiment. The cultures employed were G. V., Bn, B 12, B 4 and B 3.

Culture G. V. should be discussed at this time. This strain, which had all the ordinary characteristics of *B. bulgaricus,* was isolated from one of the subjects prior to beginning the feeding trials. There were a few x type colonies in fecal platings from this person which were very striking. He had drunk no sour milk for months previous to these experiments. The isolated strain curdled milk very quickly, developing the characteristic high acidity of *B. bulgaricus.* Fermentation tests indicated that this species would not ferment maltose.

Attention is called to this particular strain because it is the only one among dozens isolated from feces in this laboratory during the last five years which had the usual characteristics and gave the reactions of typical *B. bulgaricus.* Because of its source, its use in these experiments seemed to be of particular interest.

B 12, B 4 and B 3 were strains received from the Department of Agriculture and were labeled *B. bulgaricus.* Bn was a strain isolated from a commercial culture labeled *B. acidophilus.* This organism gave all the physiologic reactions and had the morphologic characteristics of typical *B. bulgaricus.*

Fecal platings of all subjects did not bring out any x type colonies at any time during the period of feedings. Strain G. V. did not even appear in platings of the feces of the person from whom it had been isolated. The subjects reported various reactions from a clinical standpoint. There was no person who noticed any increase in defecations; two reported increased constipation. Two suffered ill effects from the high acidity, one of these being compelled to drop out of the experiment.

These experiments strongly support the claims that typical *B. bulgaricus* does not appear in the feces after ingestion of this organism as a milk culture.

GROUP 3 EXPERIMENTS

Milk cultures of typical *B. acidophilus* containing from 100 to 200 million viable bacteria per cubic centimeter were used in the group 3 experiments. The daily dose for each subject was 1 quart. Three strains were used, and there were five experiments in all.

R-1-1 was a rat strain and had been carried in milk for four years. 4 B was another rat strain which had been isolated two years prior to this experiment. Scav. was a strain which had been isolated from a baby and had been employed as a milk culture for a year. R-1-1 was used in one experiment only. 4 B milk made daily in the laboratory was employed in one feeding; commercial acidophilus milk made by a dairy using 4 B as the starter was used in another experiment. Scav. was taken by the subjects in two experiments, the second about a year later than the first.

After the acidophilus milk had been taken for two or three days, fecal platings showed large numbers of viable *B. acidophilus*. The proportion of these colonies to the total colonies varied from 40 per cent to practically 100 per cent. The first feeding of the Scav. strain gave the highest percentages of *B. acidophilus* colonies. The second experiment with this strain did not give as startling results, but percentages were over 90. Feedings of three day old commercial acidophilus milk made with 4 B culture gave the lowest percentages of *B. acidophilus* colonies in fecal platings, from 40 to 80 per cent.

All subjects reported an increase in the number of daily defecations during acidophilus milk feeding. This was particularly noticeable when acidophilus milk prepared with the human strain, Scav., was employed.

This group of experiments warrants the conclusion that large numbers of typical *B. acidophilus* develop in the intestinal canal when ingested as acidophilus milk, and that they can be recovered by plating methods.

GROUP 4 EXPERIMENTS

Cultures B 13 and B 1 were employed in these experiments. These were strains that produced a high acidity in milk very quickly, but also fermented maltose with acid production. B 1 fermented sucrose, but B 13 did not. This last strain formed an extreme x type colony in agar, somewhat larger than any other culture used in these experiments. B 1 formed both x and xy type colonies. We have always felt that this strain was very closely related to typical *B. acidophilus*, although it came to us labeled *B. bulgaricus*.

Feeding experiments were carried out in the same manner as all others reported. Five subjects received B 1 and four were given B 13. All persons drinking B 1 milk showed from 90 to 95 per cent x type colonies at the end of the feeding period. Isolations from plates produced a culture identical with the one fed. On the other hand, platings of feces from subjects receiving B 13 cultured milk showed no x type colonies, thereby indicating that this strain did not develop in or survive passage through the intestine.

COMMENT

It is apparent from the data presented in this paper that so-called *B. acidophilus* strains that are to be used for therapeutic purposes should receive careful preliminary study. The efficacy of acidophilus milk depends on whether it is cultured with typical *B. acidophilus* or an organism that has only some of the characteristics of this species. Too much emphasis cannot be placed on fermentation reactions. The conclusion is usually tenable that any member of the Lactobacillus genus which forms an x type colony in agar, but does not ferment maltose and sucrose, will not survive passage through the alimentary canal. On the other hand, not every member of this genus which ferments maltose will necessarily pass through the intestine and remain viable.

There is to some extent the same sort of relationship between members of the Lactobacillus genus as that which exists between members of the paratyphoid group. In other words, there are small gradations of difference between closely related forms of this genus which permit the selection of a series of different strains extending from the typical *B. acidophilus* to the typical *B. bulgaricus*.

In acidophilus milk therapy, care should be taken to select a typical strain that will develop in the intestine and appear viable in fecal platings. We believe that the gram-positive rods which ferment lactose and other sugars, with acid production (and sometimes gas), but which form solid colonies on agar, should not be included in either the typical or acceptable *B. acidophilus* or *B. bulgaricus* species.

A review of the recent literature indicates that *B. bulgaricus* will not develop in or survive passage through the intestine. The data reported in this paper give added support to these assertions. There may be isolated instances in which what appears to be typical *B. bulgaricus* has been recovered from the feces of persons after ingestion of this organism as a milk culture. Kopeloff[2] reports one such case. The isolation of our culture G. V. from human feces indicates that there is the possibility of finding a few *B. bulgaricus*-like organisms at rare intervals in the intestine.

However, feeding experiments with the G. V. strain give absolutely no support to the adherents of *B. bulgaricus* therapy. If any strain of *B. bulgaricus* should adapt itself to the intestine, it would certainly be logical to expect this particular strain to do so. As has been stated, after a fair and thorough trial, it has been found not to possess this property.

In judging the merits of any species of the *Lactobacillus* genus to be employed for therapeutic purposes, one should be conservative in drawing conclusions from laboratory tests alone. The most potent culture will probably be one that has all the characteristics of typical *B. acidophilus*, preferably of human origin. Its efficacy can be, and should be, determined by actual use on average normal persons. Platings of feces should be resorted to in every case to check up the clinical results of these tests before advocating the use of any particular strain for therapeutic purposes.

It is very improbable that any typical authenticated strain of *B. bulgaricus* will measure up to these requirements.

THE ACTION AND CLINICAL USE OF EPHEDRINE

AN ALKALOID ISOLATED FROM THE CHINESE DRUG MA HUANG *

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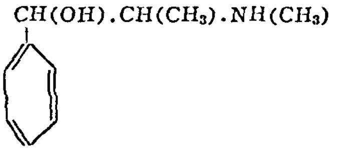
Ma huang (*Ephedra vulgaris* var. *helvetica,* family *Gnetaceae*) has been known in Chinese medicine for some 5,100 years.[1] It was one of the drugs tasted by Emperor Shen Nung (about 3200 B. C.). The Chinese use it as a diaphoretic, circulatory stimulant, antipyretic, sedative in cough, etc., and it has been incorporated into many famous prescriptions, including one for typhoid. The plant (fig. 1) is a low, practically leafless shrub, about 60 to 90 cm. high, which is sold freely in the vicinity of Peking. According to reports, it is indigenous to the sea coast and to the provinces of Chihli, Szechuan, Kansu, Shensi, Honan, Shantung and Kiangsu. It also grows in central Europe.

Ephedrine, the alkaloidal active principle, was first isolated in an impure form from the stems of ma huang in 1885 by G. Yamanashi,[2] working at the Osaka Experimental Station in Japan, and using the alkali-ether method. On Yamanashi's death, the study was continued and improved by Nagai, with the assistance of Y. Hori. Merck [3] reported that he separated the same alkaloid in 1888 by the same method, from the same variety of the plant. In 1923, Chen [4] reisolated ephedrine from ma huang by the ammonia-chloroform method. The chemical structure of ephedrine has been accepted as β-phenyl-β-hydroxy-α-methyl-ethyl-methylamine.[5]


$CH(OH).CH(CH_3).NH(CH_3)$

Its synthesis has been studied by Schmidt,[6] Nagai,[7] and Späth and Göhring.[8] The racemic mixture of the synthetic product has been patented by Nagai under the name of methylmydriatin in England, Canada and the United States.[9] A review of the isolation, constitution, isomerism, properties, derivatives and synthesis of ephedrine and pseudoephedrine, with a complete bibliography, has been prepared by Chen and Kao, and will be published shortly in the *Journal of the American Pharmaceutical Association.*

PHARMACOLOGIC ACTION

The outstanding effects of ephedrine are due to stimulation of the sympathetic nervous system and are qualitatively identical with those of epinephrine. As these effects are essentially the same in isolated organs or after destruction of the central nervous system, the drug acts peripherally like epinephrine, and is a true "sympathomimetic amine." In addition, it stimulates the central nervous system and depresses the heart, but these effects are ordinarily elicited only by toxic doses.

Action on the Circulation.—Rise in blood pressure following intravenous injection of ephedrine was first observed in rabbits in 1917 by Amatsu and Kubota.[10] We [11] demonstrated similar effects in other animals in 1924. We also found that ephedrine raises blood pressure in man when it is taken by mouth. We and also Chen and Meek [12] showed that the rise in blood pressure produced by ephedrine is much more prolonged than is the case with epinephrine. A single intravenous injection of from 1 to 10 mg. per kilogram often raises the pressure of an anesthetized dog by 100 or more millimeters of mercury, and maintains this rise for at least fifteen to twenty-five minutes. The rise in blood pressure does not strictly depend on the quantity of ephedrine given. Equally important factors are the kind of anesthetic and the condition of the animal prior to its administration. Under phenobarbital anesthesia, the rise seems to be higher than under morphine-urethane anesthesia. With ether anesthesia a primary rise may be followed by a fall with recovery. The initial level of blood pressure has a bearing on the response. If the blood pressure is very low, there is observed a less striking rise, and sometimes the blood pressure falls even after small doses. In the decerebrated dog, the dose that ordinarily raises blood pressure may lower it. Other operative procedures, such as thoracotomy and laparotomy, may lessen its power to raise the blood pressure. By repeated intravenous injections of the same dose of 1 or more mg. per kilogram, the first one is the most effective in raising and sustaining the blood pressure. Subsequent injections become more and more ineffective not only in duration but also in the degree of pressure elevation.

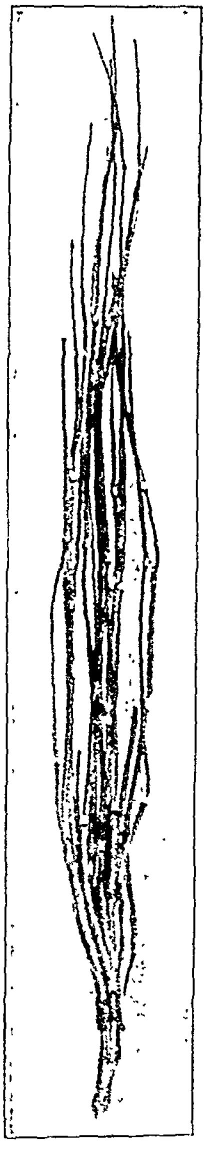


Fig. 1.—Ma huang, Ephedra vulgaris var. helvetica.

The rise in blood pressure produced by ephedrine is due to simultaneous vasoconstriction and cardiac stimulation, produced by stimulation of the corresponding sympathetic fibers. Vasoconstriction by ephedrine was observed by Amatsu and Kubota[10] in perfusing the legs of frogs and isolated organs of dogs. These results were confirmed on isolated mammalian organs by us and by Chen and Meek. In plethysmographic studies it was found[13] that as blood pressure rises pure vasoconstriction is evident only in the splenic vessels, constriction followed by dilatation in the kidney, and usually pure dilatation in the intestinal and leg vessels. Evidently cardiac stimulation plays a larger share than vasoconstriction in the pressor effect of ephedrine in anesthetized animals.

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* Read before the Section on Pharmacology and Therapeutics at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

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The action of ephedrine on the mammalian heart in situ is essentially similar to that of stimulation of the accelerator nerve—an increase in rate and amplitude of contractions.[11] If the vagi are intact, the heart may be slowed reflexly as pressure rises,[12] though amplitude of contraction is increased. After section of the vagi, or after atropine, ephedrine always accelerates the heart rate. It was found[11] that ephedrine stimulates the stellate ganglions as well as the sympathetic endings or myoneural junctions in the heart, an action that is apparently not shared by the closely related amines epinephrine and tyramine, which stimulate only the endings or myoneural junctions.[14]

Another important feature in the action of ephedrine on the heart is the depression. In amphibian hearts, whose sympathetic innervation is relatively unimportant, depression may be the only effect of ephedrine. Thus, Amatsu and Kubota[10] reported that ephedrine causes depression of rate and amplitude of contractions of the frog's heart, with final diastolic arrest. Similar results were obtained by Chen and Meek[12] with hearts of frogs and turtles. With the isolated mammalian heart it was found[13] that while dilute solutions of ephedrine cause stimulation, stronger concentrations produce only depression or arrest. In the intact normal animals this depressant action on the heart is not evident with small doses of ephedrine (from 1 to 10 mg. per kilogram), by which blood pressure is uniformly raised and cardiac contractions increased. Accelerator stimulation appears to overcome entirely the cardiac depressant action of ephedrine. Toxic doses (from 40 to 65 mg. per kilogram) in the anesthetized dog may lead to rapid failure of the heart, with a result of sudden fall in blood pressure. Electrocardiographic studies in dogs and rabbits[12] show that small doses given intravenously cause nothing more than some alteration of the T-wave. Massive doses (from 40 to 75 mg. per kilogram) appear to depress the automatic and conductive system in a descending order; that is, from the sino-auricular node to the termination of the Purkinje system. This leads to bradycardia, even after atropine, prolongation of the P-R interval, partial auriculoventricular block, nodal rhythm, ventricular escape or extrasystoles, bundle-branch block, and finally ventricular fibrillation.

The effect of ephedrine on the circulatory depression produced by histamine, peptone, anaphylaxis, trauma and hemorrhage was investigated in dogs by Chen.[15] In his experiments, ephedrine raises blood pressure in the early stage of shock and hemorrhage, but it fails to do so when the heart beat becomes impaired, or respiration ceases, or the degree of shock is too extensive, or when hemorrhage exceeds 25 per cent of the total blood volume. In some experiments (unpublished) it was found that even a small dose of ephedrine (1 mg. per kilogram) might cause cardiac failure when injected after a prolonged period (thirty minutes) of low blood pressure following histamine. Apparently a heart depressed by continued low blood pressure, with consequent inadequate coronary flow, is more sensitive to the depressant action of ephedrine, and less responsive to its stimulant effect, than the normal heart.

Action on Smooth Muscle.—Ephedrine produces mydriasis when applied locally. This was first shown in 1887 by Miura,[16] and by Takahashi and Miura[17] in 1888. These observers found that the effect is due to the stimulation of the sympathetic system and not to the depression of the oculomotor fibers. We[11] reached similar conclusions, finding that in ephedrine mydriasis the light reflex is retained and physostigmine causes prompt miosis, while after atropine ephedrine causes further dilatation of the pupil. We also noted that after the long ciliary nerves have degenerated, following extirpation of the superior cervical sympathetic ganglion, ephedrine causes definite dilatation of the denervated pupil. The action of ephedrine on the pupil is therefore analogous to that of epinephrine,[18] and it is a question whether it stimulates the sympathetic endings or the myoneural junctions. Ephedrine does not irritate or injure the ocular tissues, has little apparent effect on the conjunctival blood vessels, and has no local anesthetic effect.[11]

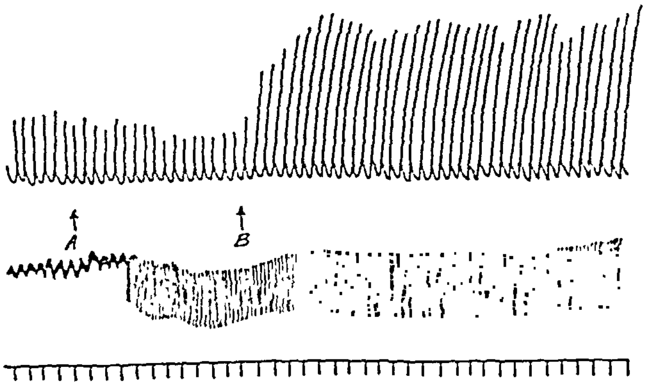

Fig. 2.—Effect of ephedrine on bronchial muscles: Dog, decerebrated and pithed, under artificial respiration. Records from above down are: intrapleural pressure, blood pressure, and time in five seconds. They are to be read from left to right. At *A*, physostigmine sulphate, 5 mg., intravenously; decrease of intrapleural pressure (bronchoconstriction). At *B*, ephedrine hydrochloride, 5 mg., intravenously; increase of intrapleural pressure (bronchodilatation).

Bronchial muscle is relaxed by ephedrine, as by epinephrine. This was shown by Amatsu and Kubota,[10] who found that ephedrine increases the respiratory volume of rabbits, after pilocarpine, peptone or muscarine has produced bronchial spasm. We[11] made a similar observation on a dog rendered asthmatic by physostigmine (fig. 2), and found ephedrine to be less effective than epinephrine.

Movements of the isolated intestines of the cat or rabbit are inhibited and the muscle is relaxed by ephedrine. This was first described by Amatsu and Kubota[10] and confirmed by To[19] and by us.[11] To found that the isolated uterus of the cat or the rabbit is relaxed by small doses and is stimulated by greater concentrations, and that the inhibitory action on the intestine is 1,000 times less sensitive than that of epinephrine. Intestines *in situ* are also relaxed when ephedrine is injected intravenously, while the uterus is stimulated in the anesthetized dog.[11]

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[13] Chen and Schmidt (footnote 11). Chen and Meek (footnote 12).

[14] Chen, K. K., and Meek, W. J.: A Comparative Study of Ephedrine, Tyramine and Epinephrine with Especial Reference to the Circulation, J. Pharmacol. & Exper. Therap. **28**: 59, 1926.

[15] Chen, K. K.: The Effect of Ephedrine in Experimental Shock and Hemorrhage, J. Pharmacol. & Exper. Therap. **26**: 83 (Sept.) 1925.

[16] Miura, K.: Vorläufige Mittheilung über Ephedrin, ein neues Mydriaticum, Berl. Klin. Wchnschr. **24**: 707, 1887.

[17] Takahashi, D., and Miura, K.: Untersuchung über die pupillenerweiternde Wirkung des Ephedrins, Mitt. med. Fak. k. Univ. Tokyo **1**: 255, 1888 (original in German).

[18] Meltzer, S. J., and Auer, C. M.: The Effect of Subcutaneous Injections and Instillations of Adrenalin on the Pupils of Rabbits, Am. J. Physiol. **11**: 28, 1904.

[19] To, S.: Einige Studien über die pharmakologischen Wirkungen des Ephedrins auf die glattmuskligen Organe, nebst über die kombinierte Wirkung des Ephedrins mit Atropin und Papaverin auf Froschoesophagus, Kyoto Igaku Zassi **18**: 411, 1921 (original in Japanese), 42 (abstract in German).

Action on Secretions.—Submaxillary secretion is sometimes increased when ephedrine is injected intravenously in anesthetized dogs.[20] The effect is not prevented by atropine and is therefore comparable to that of stimulation of the sympathetic innervation. Gastric secretion is always increased, though slightly, and other digestive secretions are not affected. Lymph flow from the thoracic duct is increased as blood pressure rises, and urine output is usually increased in dogs after the vasoconstrictor effect has disappeared. An increase in sweat secretion has not been demonstrated experimentally. In brief, the action of ephedrine on secretions is unimportant.

Toxicity.—The fatal dose of ephedrine hydrochloride, by subcutaneous injection, was found by Miura[16] to be from 0.3 to 0.46 Gm. per kilogram in rabbits, and 0.22 Gm. per kilogram in dogs. In more extended experiments, Chen[21] found that the minimum lethal dose of ephedrine sulphate, by intravenous injection, is, in milligrams per kilogram, for white rats, from 135 to 140; for rabbits, from 66 to 70; for cats, 75, and for dogs, from 70 to 75. In rabbits by intraperitoneal injection, the lethal dose is from 310 to 400; by intramuscular injection, 340; by subcutaneous administration, from 320 to 400, and by mouth, 590. Fujii[22] found a lethal dose of 500 mg. per kilogram in mice by subcutaneous injection. These figures are plotted in figure 3.

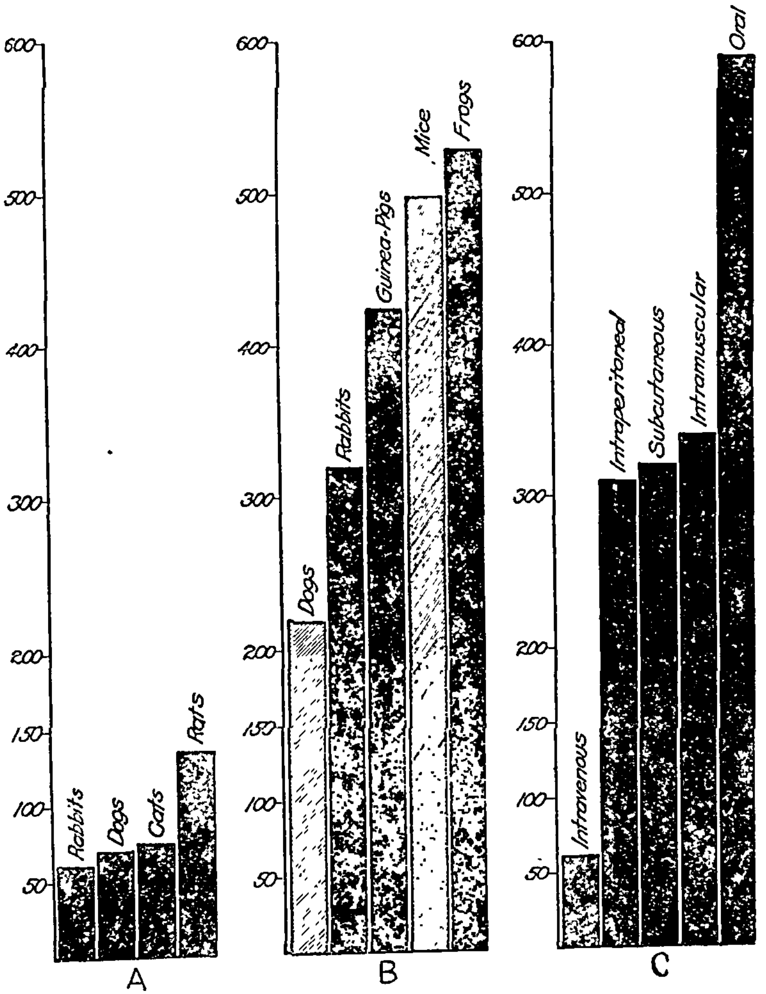

Fig. 3.—Toxicity of ephedrine in animals: *A*, minimal lethal dose in milligrams per kilogram in different species of animals by intravenous injection; *B*, minimal lethal dose in milligrams per kilogram in different species of animals by subcutaneous injection; *C*, minimal lethal dose in milligrams per kilogram in rabbits by different methods of administration. Solid columns, ephedrine sulphate; shaded columns, ephedrine hydrochloride.

Death usually follows a period of clonic convulsions and is due primarily to acute cardiac failure.[21] When large but sublethal doses are given repeatedly there are no symptoms, no interference with the normal gain in weight, no tolerance, and no pathologic changes in the viscera.[23] It is clear that ephedrine is not very toxic, and the margin of safety is comfortably wide.

Mode of Action.—Most of the physiologic effects of ephedrine are referable to stimulation of the sympathetic nervous system. The fact that ephedrine produces mydriasis after the complete degeneration of the long ciliary nerves throws doubt on its stimulating strictly the sympathetic endings. It may act on the structures more peripheral to the endings (myoneural junctions). In the heart the action appears to involve sympathetic ganglions as well as the endings, or myoneural junctions, but an action on other ganglions cannot be demonstrated.[11]

Ephedrine appears also to stimulate the central nervous system. Rabbits narcotized by chloral can be easily awakened by therapeutic doses of ephedrine, as shown by Airila[24] and by Morita.[25] Preliminary experiments dealing with the action of ephedrine as a respiratory stimulant in acute morphine poisoning in animals[26] indicate that it is superior to caffeine, atrophine, strychnine, camphor or carbon dioxide inhalation. In man, moderate doses sometimes cause tremor, nausea and insomnia, which in all probability is due to the stimulation of the central nervous system.

The fact that ephedrine elicits prolonged epinephrine effects in animals suggests that it may act through stimulation of the suprarenal glands. A series of five experiments, two on cats and three on dogs whose suprarenals were tied off or removed, showed conclusively that the effects of ephedrine are not decreased by the absence of suprarenal secretion.

Comparison with Epinephrine.—Ephedrine may be looked on as a weaker epinephrine; that is, its effects are not as intense as those of epinephrine. It has a definite depressant action on the heart in large doses, or when the heart is under unfavorable conditions. From the therapeutic point of view the advantages of ephedrine over epinephrine are its much more prolonged action, its effective absorption from the intestinal tract, its easy isolation, and its stability in solutions even after boiling, or after exposure to light and air for as long as nine months. Its toxicity being low, and it being evident that no tolerance or habit is developed by its use, the drug appears to deserve clinical trials as a possible substitute for or adjuvant to epinephrine. As far as they have gone, such trials are encouraging.

CLINICAL RESULTS

As a Mydriatic.—The action of ephedrine on the human eye was studied in 1887 by Miura[16] and in 1889 by De Vriese.[27] They found that a 10 per cent solution of ephedrine hydrochloride causes mydriasis in from forty to sixty minutes, lasting from five to twenty hours. There is no cycloplegia, no secondary inflammation, no change in intra-ocular tension, and no untoward effects after prolonged use. We[11] obtained similar results with a 4 per cent solution. As a result of the pioneer work of Miura, ephedrine has been advocated as a mydriatic for examination of the fundus, and is employed for this purpose often in combination with homatropine.[28] Merck named this mixture "mydrin." [29] The pupil returns to normal size within six hours with such a mixture. Up to the time of the work of Chen and Schmidt, no other therapeutic application was made.

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[20] Chen and Schmidt (footnote 11). Chen, K. K.: The *Effect of* Ephedrine on Digestive Secretions, J. Pharmacol. & Exper. Therap. **27**: 87, 1926.

[21] Chen, K. K.: The Acute Toxicity of Ephedrine, J. Pharmacol. & Exper. Therap. **27**: 61, 1926.

[22] Fujii, M.: Ueber die pharmakologischen Wirkungen des Pseudoephedrins und deren Vergleich mit der des Ephedrins, J. Oriental Med. **3**: 1, 1925. (Original in German.)

[23] Chen, K. K.: The Effect of Repeated Administration of Ephedrine, J. Pharmacol. & Exper. Therap. **27**: 77, 1926.

[24] Airila, Y.: Ueber die Einwirkung verschiedener Erregungsmittel der Grosshirnrinde auf den Chloralhydratschlaf, Arch. internat. de pharm. et de thérap. **23**: 453, 1913.

[25] Morita, S.: Die Einwirkung zentraler Erregungsmittel auf den Chloralschlaf, Arch. f. exper. *Path. u. Pharmakol.* **78**: 218, 1915.

[26] Schmidt, C. F.: Unpublished results.

[27] De Vriese, A.: L'éphédrine et la pseudoéphédrine: nouveaux mydriatiques, Ann. d'ocul. **101**: 182, 1889.

As an Astringent to Mucous Membranes.—Our statement[11] that ephedrine effects are qualitatively the same as those of epinephrine suggested to Dr. Alice H. Cook of the department of otolaryngology of the Peking Union Medical College the use of ephedrine locally in the nose and throat. She found[30] that a 10 per cent solution of ephedrine sulphate causes almost immediate shrinkage of an engorged nasal mucous membrane, and that the action is more rapid and complete than that of a 4 per cent solution of cocaine hydrochloride. This subject was investigated more thoroughly by Fetterolf and Sponsler,[30] who used a 5 per cent solution of ephedrine sulphate and found it so effective that they described ephedrine as a drug which, for use in the nose, "has all the advantages of epinephrine with perhaps none of its disadvantages." Shrinkage of the turbinate begins almost immediately, is complete within five minutes, and persists for nearly three hours. There is no sign of local irritation or subsequent dilatation, and by repeated administration it is possible to control the symptoms of engorgement with no untoward effects. Dunlap[31] of Peking Union Medical College has used a 5 per cent solution with good results in acute and subacute inflammations of the nose and in vasomotor rhinitis. Middleton and Chen[32] used a 1 per cent solution in the nose, with good results. Fahr[31] succeeded in relieving headache due to sinusitis with the same strength of solution.

When ephedrine hydrochloride is used, some patients complain of a "stinging" sensation, but this is not noticed with the sulphate. Growth of molds in the solution due to warm weather can be prevented by the addition of a few crystals of menthol, camphor or thymol.

The favorable results obtained with ephedrine as a local application to the nose suggest its use on other mucous membranes, particularly those of the urinary tract. So far no reports of its use in this connection have been published.

As a Circulatory Stimulant.—(*a*) In the Absence of Circulatory Depression: We[11] showed that blood pressure of normal men can be raised by ephedrine given by mouth or by subcutaneous or intramuscular injection. Its action on the circulation was studied by Miller[33] in a series of eighty-four patients, and by Middleton and Chen. Miller found in about 83 per cent of his cases a rise in systolic blood pressure, varying from a few millimeters of mercury to 60 or 70, while diastolic pressure is not constantly affected, though it tends to rise. The extent of the rise is as great when the drug is given by mouth as when it is injected subcutaneously, but it develops more slowly after oral administration. In 8 per cent of Miller's cases ephedrine did not change blood pressure, while in 7 per cent it was followed by a fall in pressure. When a rise in pressure occurs it usually lasts several hours, and in some cases it persists for more than twenty hours after a single dose. During the rise in pressure the pulse is usually slowed, though occasionally it is accelerated. The heart sounds are stronger, and systolic murmurs often appear at the apex or base. These murmurs were attributed to distention of the heart, and this was confirmed by fluoroscopic studies (Miller). Tonal arrhythmia is sometimes noted in taking blood pressure. Occasionally, auricular or ventricular extrasystoles are demonstrated by the electrocardiogram.

The average dose of ephedrine sulphate required to raise the blood pressure lies between 60 and 150 mg. (from 1 to 2½ grains) for normal adults, given by mouth in capsule, or by hypodermic injection. As much as 400 mg. (6⅔ grains) has been given in a single dose without untoward effects.

Observations on Effect of Ephedrine in Addison's Disease

Time	Blood Pressure, Mm. of Mercury		Pulse Rate per Minute
	Systolic	Diastolic	
10:20 a. m.	83	54	88
10:25 a. m.	Ephedrine hydrochloride, 200 mg. by mouth		
10:40 a. m.	85	57	86
10:55 a. m.	96	66	78
11:10 a. m.	100	68	69
11:40 a. m.	128	82	76
12:00 m.	122	82	72
1:00 p. m.	110	66	76
2:00 p. m.	107	65	78
3:00 p. m.	100	60	80
4:00 p. m.	100	60	80
7:00 p. m.	100	60	84
8:30 a. m.	90	56	86

(*b*) In Hypotension: The effect of ephedrine in chronic hypotension (systolic level below 100 millimeters of mercury) was studied by Miller in twenty-three patients. It raised the blood pressure without a single exception. Middleton and Chen obtained similar results in eight patients. It was hoped that, by repeated administration of ephedrine, blood pressure might be maintained at a normal level continuously in these cases, but this has been proved impracticable; for when a dose of ephedrine is repeated before the effects of a preceding one have worn away, the pressor effect becomes less and less marked, and it is only after an interval of about twenty-four hours or more that a second dose is as effective as the first. If the dose is increased the pressor response may or may not be greater, but these patients usually show nausea, tremor, etc., which subside only when the dose is reduced. The benefit to be expected from ephedrine in chronic hypotension is therefore only that which follows rather brief periods of elevation of blood pressure to the normal level (Miller).

Chronic hypotension is most marked in Addison's disease, and it was hoped that ephedrine would be of value in these patients. We tried ephedrine in a single case with much benefit. The results from one of the observations are shown in the accompanying table. A man, aged 30, Chinese, a huckster, was diagnosed as having Addison's disease, syphilitic periostitis and pulmonary tuberculosis. As a result, we felt that ephedrine might prove to be a specific in Addison's disease. Subsequent investigation shows that this is not so, for the striking improvement shown by their patient has not been manifested in any other similar cases. Thus, Miller found that while ephedrine caused temporary improvement in two cases, the effect could not be sustained and both patients died. Rowntree [31] treated three cases with ephedrine, with improvement in two, while the third patient complained of headache after ephedrine and the drug had to be withheld. The effect of ephedrine in Addison's disease is probably analogous to its effect in simple hypotension, and only brief periods of elevation of blood pressure can be expected from it. Because of the underlying pathologic condition, Addison's disease is uniformly fatal, so that it will be absurd to hope for a cure from the use of ephedrine.

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[28] Groenouw: [illegible] ein Mydriaticum von rasch vorübergehender [illegible] Wchnschr. **21**: 161, 1895. Suker, G. F.: [illegible] Mydriatic, New York M. J. **61**: 714, 1895. [illegible] Some Remarks on a New Mydriatic (Ephedrine Hydrochloride), Lancet **2**: 24, 1898.

[29] Merck, E.: Mydrin, Berichte, 1894, p. 84.

[30] Fetterolf, G., and Sponsler, M. B.: Ephedrine Sulphate, the Alkaloid of Ma Huang, Arch. Otolaryn. **2**: 132, 1925.

[31] Personal communication to the authors.

[32] Middleton, W. S., and Chen, K. K.: A Clinical Study of Ephedrine, to be published.

[33] Miller, T. G.: A Consideration of the Clinical Value of Ephedrine, Am. J. M. Sc. **170**: 157 (Aug.) 1925.

In acute circulatory crises, ephedrine would be expected to be of more value. We [11] investigated its effect in surgical shock in a single patient, with encouraging results. Miller reported real improvement in two cases in profound shock. Since then it has been tried in a large number of cases of shock and hemorrhage, usually without beneficial result, even though the drug is given intravenously. The experiments made by Chen [15] on the effect of ephedrine in various forms of shock in dogs indicate that the drug is useful only under suitable conditions. It is probable that the integrity of the heart function is the chief factor, for unless the heart is in good condition ephedrine may have no effect or produce simple depression. When blood pressure has been low for some time the heart function must be impaired through deficient coronary flow, and ephedrine may likely injure the heart under the circumstances that call most urgently for a circulatory stimulant. Another factor is the relative weakness of ephedrine as a stimulant to the vasoconstrictor and cardiac accelerator system, so that it may be unable to produce any effect in cases of shock and hemorrhage, in which vasoconstriction and cardiac acceleration are already present.

In Cardiac Disorders.—Miller [33] reported the occurrence of transitory pulsus alternans in a patient with myocardial degeneration. Another patient with complete heart block showed an increase in both auricular and ventricular rates after ephedrine. Its action in auricular fibrillation was studied by Middleton and Chen [32] in a single patient who had developed hiccup in addition to cyanosis, edema and dyspnea. Ephedrine caused a rise in arterial pressure and a fall in venous pressure, and stopped the hiccup, but had no effect on the fibrillation. It is evident that a potential cardiac depressant and an active accelerator stimulant like ephedrine must be used with caution in the presence of cardiac disease. The possibility of benefit by ephedrine in cardiac decompensation, evident in the patient of Middleton and Chen, deserves further investigation, as well as its action in combination with digitalis.

In Asthma.—Miller [33] found that ephedrine given by mouth or injection during attacks improved six out of seven cases of asthma. In four patients ephedrine by mouth brought complete relief; in two others it reduced markedly the number of epinephrine injections that were required, while in only one patient did it fail entirely. In a much larger series of patients he has found only exceptional instances of complete failure of ephedrine to relieve the paroxysms, though a large proportion of the patients continue to require occasional injections of epinephrine. The success of epinephrine when ephedrine alone is unable to bring complete bronchial relaxation is to be expected from our experiments,[11] as we found that ephedrine is a weaker bronchodilator than epinephrine in animals. A curious feature in the action of ephedrine in asthmatic patients is that it usually dilates the bronchioles without raising systemic blood pressure, while a similar dose regularly raises blood pressure in nonasthmatic patients. The difference must be due to an effect on the pulmonary circulation. Middleton and Chen [32] studied ten cases of asthma not associated with cardiac disease. Of these, six were definitely improved, two doubtful, and the other two not affected. Wearn [31] used ephedrine in six cases of asthma due to sensitization, in several associated with chronic bronchitis, and in one with tuberculosis. Relief was brought about when given by mouth, in from 60 to 100 mg. doses.

Other Effects.—Basal metabolism was found to be increased regularly after ephedrine by Miller [33] and by Rowntree.[31] Its effects on blood sugar were inconstant in Miller's cases, though Nagel [34] reported a definite rise after intravenous injection in rabbits. Urine secretion was not constantly altered in Miller's series, though there was a tendency to diuresis after the drug. Miller tried ephedrine in two cases of urticaria, both of which were relieved by it. As an ingredient of local anesthetic solutions ephedrine seems to be too weak a vasoconstrictor, for it may be absorbed from the subcutaneous tissues and produce systemic effects. In one case a marked rise in blood pressure followed its use in a procaine solution, and local anesthesia was imperfect. Obviously, such a procedure is unsafe.

Untoward Effects.—No serious results have been reported from the use of ephedrine in man, even in single doses of 400 mg., or in portions of 150 mg. repeated every three hours day and night. No signs of habit formation or development of tolerance have been encountered, even when the drug has been given over a period of months. Some patients, especially women, after receiving 200 mg. of ephedrine by mouth, complain of some of the following symptoms: perspiration, chill, palpitation, weakness, dizziness, nervousness, tremor, nausea and epigastric discomfort. Sweating and tremor can be objectively confirmed. While it is interesting to note that the drug actually possesses diaphoretic properties, for which it has been highly esteemed in China, the action is apparent only in persons who show obvious signs of an effect on the central nervous system. In some patients insomnia and some of the foregoing symptoms develop after the drug has been given in smaller doses for some time (several days or weeks) and they subside when the drug is withdrawn. The most probable explanation of these effects is a stimulation of the central nervous system.

In several cases transient gross albuminuria develops after ephedrine, and in most cases it is possible by delicate tests to show the presence of some albumin in the urine after the drug. This phenomenon has been studied recently by Starr,[35] who finds similar results from other vasoconstrictor agencies (epinephrine, asphyxia). He attributes the albuminuria wholly to renal vasoconstriction, and as none of these patients show any other signs of deranged kidney function, it is evident that ephedrine does not injure the kidney directly.

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[34] Nagel, A.: Ein Beitrag zur pharmakologischen Analyse der Ephedrinwirkung, Arch. exper. Path. u. Pharmakol. **110:** 129, 1925.

[35] Starr, I., Jr.: The Production of Albuminuria by Renal Vasoconstriction in Animals and in Man, J. Exper. Med. **43:** 31 (Jan.) 1926.

The possibility of serious depression of a weakened heart by ephedrine has been evident only in the case of myocarditis, reported by Miller,[33] who showed an alternating pulse after the drug was given. The effect was transitory and no serious after-effects were seen. Experimental evidence indicates that ephedrine, injected intravenously in cases of profound shock of thirty minutes or more duration, may cause cardiac failure, but so far the worst effect from ephedrine in human subjects in shock has been a steady, uninterrupted progression of the condition.

It is evident, therefore, that each of the three chief features in the action of ephedrine, stimulation of the sympathetic innervation, stimulation of the central nervous system, and the depression of the heart, may produce untoward effects in human beings. Stimulation of the sympathetic fibers in the kidney may produce albuminuria, stimulation of the central nervous system may cause insomnia, nausea, tremor, etc., and depression of the heart may cause arrhythmias, or possibly even cardiac failure, though so far this has not been reported.

COMMENT

The use of ephedrine as a substitute for epinephrine in therapeutics is based on the fact that the substances are closely related chemically and physiologically. Ephedrine, while less active physiologically, has the advantage over epinephrine of eliciting more prolonged effects, of being effectively absorbed when taken by mouth, and of being a much more stable substance. Its low toxicity and its occurrence in a common Chinese plant are circumstances favorable to its widespread use, should it be found of value clinically.

The results of clinical trials of ephedrine so far indicate that it will be found to be most useful as a local application to the nose in cases of chronic congestive conditions such as hypertrophic rhinitis and hay-fever. This alone would make it a useful drug.

Of almost equal promise are its effects in asthma. A drug which will control the symptoms entirely, or at least reduce the number of epinephrine injections that are required, and which can be given effectively by mouth, appears to be a real addition to therapeutics. The precise limitations of ephedrine in asthma are not yet evident, but it seems certain that it will be found useful in many, if not in most, cases.

As a circulatory stimulant, ephedrine has been rather a disappointment. In chronic hypotension it seems to be of little or no value, and in acute circulatory crises it usually fails to work. It is possible that ephedrine will find a place in the treatment of acute crises when the reasons for its usual lack of effect are considered. These are its inability to cause appreciable stimulation of the vasomotor system because it is a weak stimulant and the system is probably already stimulated, and its tendency to depress the heart. If ephedrine is given with epinephrine, ephedrine may prolong the effect of the stronger stimulant.[14] The tendency to cardiac depression can be minimized by improving the coronary circulation by means of epinephrine and saline infusion or transfusion of blood before ephedrine is given. It should be possible, by means of a combination of ephedrine with preliminary infusion of fluid and epinephrine, to secure some beneficial effects from ephedrine in many cases of shock. Ephedrine should not be injected intravenously in cases of profound shock if epinephrine fails to elicit a response, for it can do no good and may do harm. Ephedrine is certainly not to be regarded as a specific for shock. Its actual usefulness remains to be determined clinically.

Ephedrine may prove valuable in the treatment of anaphylaxis and urticaria, and as a respiratory stimulant in poisoning by narcotic drugs. In the latter connection it seems to be more regularly effective and less dangerous than any other single drug in experimental morphine poisoning. Its use in ophthalmoscopic examination should not be lost sight of.

All of the results reported above have been obtained with ephedrine sulphate or hydrochloride, salts of the alkaloid of the Chinese plant ma huang. There are other alkaloids, isomeric with ephedrine (pseudoephedrine, methylmydriatine) which may differ physiologically. Until a comparative study of these compounds is carefully made, the statements mentioned above can be applied only to ephedrine, obtained from the Chinese plant by the methods already described.[36]

ABSTRACT OF DISCUSSION

Dr. George E. Brown, Rochester, Minn.: Through the courtesy of Dr. Bernard Read of Peking, we were furnished with an amount of this drug for clinical trial, and Dr. Rowntree and I were particularly interested in determining its efficacy in Addison's disease. We observed fourteen cases of Addison's disease last year which were treated with ephedrine. There is no question as to the efficacy of this drug in increasing the blood pressure. We were able to demonstrate increases of from 25 to 30 mm. of mercury. This increase in blood pressure was not accompanied with the desired systemic improvement that we had anticipated; that is, one could obtain a rise in blood pressure, but the patient did not accordingly feel improved in his clinical condition. We tried this drug in three cases of Addison's disease in the so-called shock state but were unable to demonstrate any particular benefit in this condition. In cases of essential hypotension and chronic exhaustion, we could also demonstrate a very definite increase in blood pressure from doses of 100 to 150 mg. a day. One patient had 150 mg. a day for thirty days and a very definitely maintained increase in his systolic pressure, but without a significant change in the diastolic pressure. There was usually some subjective improvement. Toxic effects were lacking or very mild. There is no question as to the pressor effects of this drug. Raising the blood pressure would not, of course, affect the underlying disease. Dr. Gaarde of the Mayo Clinic has been using ephedrine in ragweed hay-fever and he reports that 50 per cent of the patients had marked relief for from three to eight hours. To me, it is a most interesting idea that a drug known in Chinese medicine for 5,000 years is now shown to have pharmacologic action similar to epinephrine and promises to play a rôle in our future treatment of disease.

Dr. A. P. Munsch, St. Louis: I should like to ask Dr. Chen if it has been observed whether the blood sugar is increased when this drug is used. In cases of diabetes mellitus with low blood pressure, would this drug be available and effective or would it be a danger to the patient?

Dr. Ralph H. Major, Kansas City, Mo.: We have worked with this drug in the laboratory and can confirm the rise in blood pressure which Dr. Chen described. I have seen a marked improvement in asthmatic patients and have also been able to raise the blood pressure in patients suffering from hypotension. It is a very interesting feature that the action of ephedrine is similar to that of epinephrine, but it can be administered by mouth. I am sure that patients will appreciate this feature. I should like to know whether Dr. Chen has found it necessary to give patients with hypotension constantly increasing doses in order to raise their blood pressure; also whether he has studied microscopically the arterial or capillary changes produced by this drug.

Dr. Joseph L. Miller, Chicago: Does this drug relieve bronchial asthma and hay-fever when taken by mouth or must it be given subcutaneously? We are much in need of a drug which will relieve asthma that can be taken orally.

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[36] Nagai (footnote 2). Chen (footnote 4).

Dr. Clyde Brooks, Tuscaloosa, Ala.: I should like to ask Dr. Chen whether this drug acts quantitatively and qualitatively like epinephrine on all the tissues and organs which he has tested; in other words, whether it has what is termed a sympathomimetic action. Another point is, whereas in Dr. Chen's tracings there is a rise in blood pressure which lasts for a long time, the volume curve at first shows decrease followed by increase in volume. Why does the volume curve not follow the blood pressure curve? Where does the blood go during the decrease, and where does it come from during the increase in volume?

Dr. J. I. Johnston, Pittsburgh: Answering Dr. Miller's question: the drug certainly seems to take the place of epinephrine in relieving bronchial asthma. It has been particularly useful in cases in which pulmonary emphysema was present and the patients have been advanced in years. Our experience seems to bear out all Dr. Chen has said. We have, however, seen one drawback and this has been explained in the paper. Our patients complained of sleeplessness. The drug relieved the syndrome of asthma, it produced a definite rise in blood pressure, and the only objection seen was the inability to sleep well.

Dr. Julian E. Benjamin, Cincinnati: Will Dr. Chen tell whether he has observed the effect of ephedrine in collapse in pneumonia? Would he also explain whether the action of the drug in stimulating the human heart is similar to the experiment shown here, namely, that in the initial phase there is stimulation followed by depression. Is this true when the drug is given by mouth? Is there diminished kidney excretion when the drug is given clinically by mouth as when it is given intravenously in the experiment?

Dr. K. K. Chen, Madison, Wis.: An English drug house recently sold to this country a considerable quantity of so-called ephedrine hydrochloride. We found that the drug was not effective clinically in the control of asthma, and that its physical constants were entirely different from those of our own product. I hope that any who use ephedrine will be certain of its purity in order to avoid any unnecessary discrepancy of results which may soon appear in literature. In answer to Dr. Munsch's question, Dr. T. G. Miller's clinical work does not indicate any consistent change of blood sugar after the administration of ephedrine. In our experiments with animals (rabbits and dogs), we have found hyperglycemia which is not so high as occurs after ordinary doses of epinephrine. I cannot tell whether it will be dangerous in diabetes or not. The question can be answered only by trial. At the Wisconsin General Hospital we gave ephedrine to a diabetic patient because of hypotension. No untoward symptoms were experienced by that patient although there was a slight disturbance of blood sugar. With regard to Dr. Major's questions, the most effective dose is the first one; for repeated administration may not raise as much blood pressure as the first. I do not believe there is any good reason to increase the dose. It is usually often enough if the drug is given two or three times a day. Concerning the action of ephedrine on capillaries, I have done some work on the frog's kidney and tongue. The results so far are not definite and I am not in position to make any statement. Dr. Miller's question has been answered by Dr. Johnston. Ephedrine can be taken by mouth instead of by hypodermic injection. The effect is just the same. In hay-fever we have not enough data to justify a conclusion. In our experience, when there is no asthmatic attack in association with it, the local application of ephedrine to the nasal mucosa markedly relieves the congestion. Anyway, I do not think that ephedrine can desensitize the patient, because there is no ground for it. Answering Dr. Brooks' question, roughly speaking, ephedrine acts like epinephrine. In a limited period of time, I cannot enumerate the exceptions, such as the action of ephedrine on the stellate ganglions, which is not shared by epinephrine. When injected intravenously, the intestinal and leg vessels are dilated, while the splenic and renal vessels are constricted. The distribution of blood in the body is therefore obvious. Dr. Johnston's remarks need no answer, with the possible exception of the sleeplessness. I do not know how many cases he has treated. In our experience, as in Dr. Miller's, sleeplessness is not a constant feature. The more common complaints are perspiration and tremor. At the Wisconsin General Hospital we have treated ten cases of asthma to date. None of them showed insomnia. One patient with simple chronic hypotension was troubled with sleeplessness, but we were able to control it by the administration of barbital. Dr. Benjamin mentioned the possibility of giving ephedrine in the collapse of pneumonia. We have not enough data on that subject. We had, however, a very interesting case at Philadelphia. A resident came down with pneumonia. He was on the verge of death and became nearly breathless. Ephedrine was administered intramuscularly twice. Within a few hours his condition was much improved, and he recovered in a few days. We do not know whether it was a spontaneous recovery or whether ephedrine actually helped him to overcome the crisis. It certainly gives us a favorable hint. Dr. Benjamin also asked whether there is any renal vasoconstriction after the use of ephedrine in human beings. I think there is. Dr. Starr has published his results recently. He found a transient albuminuria after ephedrine, which he attributes to renal vasoconstriction.

DIAGNOSTIC CRITERIA OF MALIGNANT DISEASE IN THE UPPER RIGHT QUADRANT *

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The abdomen contains no less than thirty-seven important organs and tissues, if we include the adjacent retroperitoneum, and every one of these is subject to malignant disease. The variety and complexity of these organs and resulting clinical phenomena in malignant disease are so intriguing that careful clinicians must take keen delight in every research that advances conclusive diagnosis. The upper right quadrant, the limitation of my paper, embraces no less than twelve of these organs, and is the most interesting and difficult of the abdominal divisions.

CLINICAL PHENOMENA

The number, variety and functional activities of these organs in malignant diseases will produce such alterations in the anatomy, usually progressive destruction, as may often be recognized; if physiologic alterations in secretion and excretion and absorption and motor function could be as easily recognized at early stages, much improvement in diagnosis and even in treatment would result. Subjective phenomena are still of the greatest importance, in spite of the fact that hurrying clinicians have depended entirely too much on laboratory findings. Objective phenomena are of less importance, because of later appearance, when destruction or obstruction has advanced usually to irremedial conditions. With the exception of the accuracy of roentgenologic examination in gastric malignant disease, and, to a far less degree, in colon and renal cancers, no diagnostic criterion is available to make a positive diagnosis with the single exception of the cancerous tissue recovered by clinical means and confirmed by microscopic examination.

THE STOMACH

When one remembers that nearly all carcinomas of the gastro-intestinal tract are located in the stomach and colon, the problem is somewhat simplified. When it is further recalled that in both of these viscera the scirrhous, encephaloid and colloid forms occur with somewhat

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* Read before the Section on Practice of Medicine at the Seventy Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

differing frequency and differences in symptomatology, the disease is rather less confusing. We are told in textbooks of anatomy that the stomach lies five sixths in the left and one sixth in the right hypochondrium, and, consequently, our problems refer more particularly to the pyloric carcinomas, which more easily and more early produce obstructive phenomena than those situated in the greater curvature or cardia. The recent knowledge of the stomach, however, gained by roentgenologic examinations shows that its location is variable. The intensity of the malignant process, as well as the location, also give important indexes. For example, a scirrhous growth, progressing slowly, does not produce the cachexia of early ulcerative processes in the more rapidly growing fungating type.

Among those symptoms arousing suspicion, as emphasized by Osler and previously commented on by others, is the sudden beginning of dyspeptic symptoms, which persist in a person past 40, who has always had a "cast iron or ostrich" stomach. Too much stress can scarcely be put on this fact, and the most painstaking efforts should be made to ascertain whether such symptoms, so occurring, do not mean a malignant condition. Notwithstanding the infrequency and now, with modern surgical explorations and roentgenologic examinations, the increasing frequency of cancer of the young, even down to early childhood, the fact remains that youth is comparatively rarely affected by cancer of the stomach, and the age incidence of 45 to 70 must still be regarded as of the highest indicative importance. I myself have not had a patient with cancer of the stomach who was under 30 years of age, but modern methods of diagnosis and operation confirm cases in early life. Osler and McCrae presented six cases in children under 10 years of age in 1909, out of a study of 7,000 cases. They range from 6 weeks to 10 years of age. Schlesinger [1] reported cases in persons ranging from 10 to 20 years of age in almost every year, and between the ages of 20 and 30 the number steadily increased. Sullivan [2] in 1924 reported the case of a student, aged 22, and estimated that from 3 to 4 per cent of cancers of the stomach occur in the third decade. He likewise concludes that "there is no demonstrable differences as to the histologic type of juvenile carcinoma or with respect to the seat of the growth in the stomach. There are only three factors by which these juvenile cancers differ from those seen in older patients; namely, absence of cachexia, early onset of high temperatures, and early formation of metastases." One must also consider suddenness of onset and rapid course as being more common in early life.

If one considers the clinical evidence it is apparent we have substantially three types of cases with corresponding variations in symptoms, as follows:

(*a*) Those past 40 years of age with a history of previous robust health and no stomach trouble whatever. They usually begin suddenly or with comparative rapidity to complain of epigastric discomfort, distress after eating, eructations, fulness, soreness, more or less pain, anorexia or diminished desire for food, distaste for certain articles previously enjoyed, weakness, loss of weight, nausea, vomiting, and almost always constipation in those who have previously been regular. With these symptoms, signs of anemia, cachexia, palpable tumor, emaciation and jaundice supervene. The usual gastric reactions to test meals and the early appearance of filling defects make the diagnosis.

(*b*) The gastric and duodenal ulcer type, in which dyspeptic symptoms begin several years before, occur intermittently, with mild to moderate severity, and finally take on increased severity and progress suddenly or gradually. They present a large class having early hyperacidity, to be followed by variations at a later date, not infrequently becoming achlorhydric. It is this class, perhaps, that occasions the recurring differences of opinion as those held by T. Gregory Cole and the Mayo group, in regard to the transition from benign to malignant ulceration. Those of us watching such cases for years must conclude that ulcus carcinomatosus exists clinically or that an actual carcinoma ulcer has existed over a much longer period of time than we have hitherto believed.

Gastric analysis, blood exhibits and signs of cachexia will vary according to duration, intensity and coincident factors.

Roentgenologic findings are often conclusive, although a word of caution must be given in accepting them as final, when so great an authority as Carman [3] states that "like every other diagnostic test the roentgen ray is not infallible. Sometimes it overlooks; sometimes it misinterprets." Brams [4] reports an instructive case of benign plaque-like adenoma of the stomach, with a large filling defect found by the roentgen ray and believed to be an inoperable carcinoma of the stomach. This suspicion was strengthened by the association of anemia, emaciation and achlorhydria and the presence of ferment acid in the gastric contents. In a case that I saw, roentgen-ray examination revealed a large filling defect caused by a dermoid cyst and led to a diagnosis of carcinoma, although the general health hardly justified such a diagnosis. Not infrequently, gastric syphilis presents a roentgenologic picture indistinguishable from carcinoma and resulting in confusing and lamentable error in diagnosis. Cases of gastric carcinoma occurring in a syphilitic patient and presenting evidences of both diseases constitute a particularly difficult problem. In my own experience, antisyphlitic therapy has produced disappointing results in relief of the gastro-intestinal symptoms and led to a more difficult diagnosis of the accompanying malignant disease in a few instances.

(*c*) A small group of cases presenting a close superficial resemblance to pernicious anemia. There is no palpable tumor, and ordinary gastric and roentgen-ray examinations reveal signs of cancer.

Garvey and Stern [5] report an interesting case of posterolateral degeneration of the spinal cord with carcinoma of the stomach, clinically and pathologically resembling pernicious anemia. The blood count was 3,150,000 red cells, 5,100 white cells and 81 per cent hemoglobin, thus giving a hemoglobin index of almost 1.3 per cent and closely approaching the addisonian anemia. The postmortem revealed the pathologic condition of the cord and an adenocarcinoma of the pylorus, with metastases in the peritoneum and mesentery but none in the spinal cord.

The number of these cases is small, and critical study now enables the careful diagnostician to make the distinction. Little has been said regarding the chemical observations in test meals, such as the Wolff-Junghaus reaction or the Ewald, Boas or fractional test meals, and it is difficult to accept the positive conclusions of T. Isod Bennett,[6] who asserts that the old methods of gastric analysis are faulty and avers that the use of the fractional method makes it exceedingly rare for a case of carcinoma of the stomach to occur without a positive diagnosis being established as soon as gastric analysis is performed. Such has not been my experience. All forms of gastric analysis have failed me in establishing a certain diagnosis. While many other diagnostic methods, such as the complement fixation test, the Abderhalden reaction and the Friedenwald sugar curve, are helpful, one must still rely more definitely on the history, physical examination, roentgen ray, and the rare cases in which tumor cells are found in the gastric contents.

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[1] Schlesinger: Surg. Gynec. Obst. **39**: 284 (Sept.) 1924. Bibliography.

[2] Sullivan: Surg. Gynec. Obst. **39**: 285 (Sept.) 1924.

[3] Carman, R. D.: Southern M. J. **15**: 20 (Jan.) 1922.

[4] Brams, W. A.: M. Clin. N. Amer. **8**: 533 (Sept.) 1924.

[5] Garvey, J. L., and Stern, L. D.: Am. J. M. Sc. **168**: 847 (Dec.) 1924.

The duodenum is so seldom cancerous that it need not be discussed here. I have never seen a case of duodenal cancer except by extension.

No reference has been made to carcinoma of the omentum, but I have seen one case in my own practice presenting a large colloid carcinoma of the omentum, secondary to the stomach, resulting in a large tumor in the epigastrium and having the so-called snow crepitus sign. On palpation, the mass gave a sound and palpable sensation very similar to that elicited by crunching the foot into dry snow.

THE LIVER AND BILE PASSAGES

This discussion is confined to primary carcinoma of the liver, which is still a rare disease, although being steadily reported with increased frequency. The earliest cases reported within my knowledge were two by Kelsh and Keiner,[7] Counseller and McIndoe[8] reported five cases, four of which were hepatoma and one cholangioma. The criteria are not distinctive, but one should consider seriously the following:

1. Pain, in nearly all cases ranging from mild discomfort to the dull or cramping type, the latter usually in the lower part of the abdomen, the former in the epigastrium and right hypocondrium.
2. Digestive disorders, usually anorexia, nausea, vomiting, eructations, gaseous distention and, almost constantly, constipation.
3. Jaundice, slight and usually progressively deepening, a symptom said by Torland[9] to occur in 63 per cent of the cases.
4. Ascites, often occurring early and increasing rapidly with edema of the feet and extremities coming later.
5. Loss of weight and strength, occurring rather rapidly and progressively, and ranging from 10 to 20 or 40 pounds or more. Less constant and important symptoms are fever from 100 to 103 F., usually late and very rarely accompanied by chills. Bronzing of the skin of the face and neck, chest and abdomen is occasional. With metastases to the lungs, kidneys and other organs, the symptoms referable to them may confuse the picture.

Among the signs of importance in suspecting the disease are:

1. Massive or nodular enlargement of the liver.
2. Fluctuation in the abdomen, shifting with the position and quantity of fluid.
3. Fixity of the liver, becoming immobile in respiration and on palpation, mentioned by Counseller and McIndoe and quoted from Brulé.[10] There is rapid progress, death usually occurring within four months. All of the foregoing symptoms and signs may be present in secondary carcinoma, and diagnosis of the primary form must not be made until every focus of primary involvement from the eye to the rectum is carefully investigated as originally suggested by Virchow, and this requires extensive postmortem examination.

GALLBLADDER

Carcinoma of the gallbladder is infrequent as compared with that of other organs, and we must rely for suggestive signs on pain, tumor and jaundice. Even the roentgenologic examination sheds no conclusive light, and surgical exploration is now so safe that delay should not be tolerated in doubtful cases. The symptoms and signs of carcinoma of the bile ducts are difficult, particularly the small ball-and-socket-like growth of the ampulla of Vater, and I know of no differentiating signs.

PANCREAS

Malignant neoplasms of the pancreas are largely carcinomatous. Sarcoma is next in frequency, and, in the light of the case reported by Foot, Carter and Flipse[11] in 1924, neuroblastoma may be considered. The primary symptoms are usually few and prominent and progressive. The secondary symptoms are less suggestive. We must rely on pain. It is commonly epigastric and dull, though I have seen one case in which pain was persistent and intense and was referred to the middle of the back and around the left costal margin. This pain was accompanied immediately by the occurrence of glycosuria, which was known to be absent previously. The pain occurred suddenly, while the patient was on a shopping tour, and never disappeared. Loss of weight began at once, while there were no gastric or intestinal symptoms of consequence. Jaundice did not appear for two months and was never as deep as usual but persisted until death. Exploration disclosed a carcinoma the size of a hen's egg in the body of the pancreas adjacent to the head. The patient succumbed in a short time in acidosis coma. The pain of carcinoma of the pancreas is occasionally paroxysmal and so intense as to resemble gallstone colic. Such a case in a man aged more than 60 with progressive muscular atrophy came under my observation. Three separate attacks of agonizing pain, accompanied by nausea and intense vomiting, gaseous distention and disturbing constipation, were soon followed by pronounced jaundice, which cleared up in about one week. Operation revealed no trouble with the gallbladder but a firm and large head of the pancreas, which proved on postmortem examination to be carcinoma and fibrosis.

Jaundice is ordinarily progressive and may produce bronzing of the skin, and in about 50 per cent of the cases is associated with Lavoisier's sign—a distended gallbladder. After the tumor is large enough or the wall of the abdomen sufficiently thin or relaxed or an anesthetic is used, palpation of a fixed mass in the epigastrium in the median or just to the right of the median line, and associated with pain and jaundice, such a diagnosis may be made before emaciation, weakness, cachexia and other signs occur. Buckstein[12] reported a case of tumor of the head of the pancreas in which a wide duodenal curve was revealed by roentgen-ray examination and the duodenal tube, and made possible a clinical diagnosis confirmed by operation; but my own experience in wide duodenal curves has been disappointing as a diagnostic criterion, as a number of causes may produce a radiologic picture of this type. Cachexia, with anemia and wasting, which may be rapid, terminating life in a few weeks, constitutes, with abdominal pain and jaundice, a sufficient picture for the diagnosis. Absence of pancreatic ferments, fatty diarrhea, urinary crystals and other subsidiary signs may be helpful in doubtful cases, but surgical exploration should be resorted to for diagnosis before fine, hair splitting chemical evidences are invoked. No criteria whatever could be conclusive in such cases as the one first referred to and reported by Foot, Carter and Flipse, which presented a symptomatology pointing to the brain, and thought by them to be a cerebellar tumor or abscess; but postmortem revealed a neuroblastoma or carcinoma of the head of the pancreas, with an insignificant clinical history of three weeks. The patient complained of a knifelike pain in the back of the head, radiating down the back and neck and causing stiffness and retraction. Vomiting occurred two weeks before, and the patient was still at work. Neither the previous history nor the physical examination in this case justifies suspicion of the pancreas.

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[6] Bennett, T. I.: Brit. M. J. 2: 275 (Aug. 18) 1923.

[7] Kelsh and Keiner: Arch. Phys. 2: 622, 1876.

[8] Counseller, V. S., and McIndoe, A. H.: Primary Carcinoma of the Liver, Arch. Int. Med. 37: 363 (March) 1926.

[9] Torland, T.: Northwest Med. 21: 253 (Aug.) 1922.

[10] Brulé, cited by Castaigne, J.: Traité de pathologie médicale de thérapeutique appliquée, Paris 12: 383, 1923.

[11] Foot, N. C.; Carter, B. N., and Flipse, M. J.: Am. J. M. Sc. 167: 76 (Jan.) 1924.

[12] Buckstein, Jacob: Surg. Gynec. Obst. 39: 509 (Oct.) 1924.

COLON

About 75 per cent of cancers in the large bowel occur in the sigmoid and rectum. The cecum, splenic flexure and hepatic flexure come next in frequency. Slesinger[13] classifies these malignant growths as being scirrhous or encircling, soft, encephaloid or cauliflower, or infiltrating colloid; and he infers that irritation produced by stasis results in bands, increasing the mechanical difficulties of elimination and thus furnishing the chronic irritation background for the neoplasm.

The age incidence again includes 40 to 70 years, but evidence in the young is increasing. Erdmann and Carter[14] give an illuminating diagram of 129 cases of cancer of the colon in which operation was performed by Erdmann in the Post-Graduate Hospital in New York in 1922, which showed fifteen cases involving the terminal sac, hepatic flexure and proximal colon. This percentage of 0.012 probably closely approximates other surgical experiences. The oldest of his patients was 89, and the literature contains reports of cases down to the age of 3 years. The literature is full of reports, but they are largely surgical and frequently make little reference to the specific symptoms in the right upper quadrant.

Owing to the fluidity of the contents in the ascending colon, a greater degree of obstruction must be present as compared with the sigmoid and descending colon to arouse early suspicion from pronounced obstipation. Moreover, carcinoma of the colon seems to be more latent and to progress more slowly than those of any other important organs. This appears to be especially true with the right colon, where discomfort and anemia, even quite pronounced, may occur before signs of a malignant condition arouse attention. Such neoplasms are likely to be present with indefinite symptoms for two or three years before a clinical diagnosis is made. Tumor is not palpable in half of the cases and is frequently obscure and uncertain, particularly in the flexures.

The symptoms suggesting diagnostic criteria in the subhepatic region are:

1. Pain or discomfort, vague and indefinite, occurring occasionally at the site of the growth but often referred to the appendical or umbilical region. It may appear following meals or have no relation to food ingestion and be colicky in character and diffused over the abdomen, later to show more definite locus.

2. Diarrhea. In one previously normal or constipated and of cancer age, irregular attacks of loose bowels without appreciable cause, and recurring from time to time, should arouse suspicion and investigation. When there is obstruction, a more pronounced degree of constipation is present, usually relieved by laxatives and producing slight relief. Blood, pus and mucus in the stool are highly suggestive but apt to be present in descending colon cancer, while occult or open blood or none at all may be found in malignant growths of the ascending or first portion of the transverse colon.

3. Anemia and cachexia are usually much more pronounced in malignant conditions of this area, and in one of my cases a tumor of the cecum of three years' duration produced a blood picture almost identical with pernicious anemia and proved on postmortem to be a carcinoma. Jones and Hayden[15] observed this fact and attribute it to the bleeding from the adenomatous growth which occurs more frequently in the right side, and they quoted Sir Harold Stiles to the same effect, and he explained this fact by the larger absorptive surface and the more common ulcerative growth in this region.

Emaciation may not be pronounced as in cancer of the pancreas and stomach and may not attract attention even when complete obstruction supervenes. The foregoing symptoms in any patient of cancer age or persisting in the young are sufficient to arouse investigation, and call for two well nigh conclusive efforts at diagnosis:

(*a*) The barium clysma, not the gastric meal, which will reveal filling defects; but it must be remembered, as Slesinger states that "Lane's 'last kink' by itself will sometimes produce a roentgen-ray obstruction indistinguishable from cancer, and if this is combined with the presence of occult blood in the feces, exploration affords the only means of differential diagnosis."

(*b*) Surgical exploration. The well nigh universal use of these agencies steadily diminishes our diagnostic errors, and with the far earlier diagnosis now made the chances of the patient for curative surgery in this field are greatly enhanced.

ABSTRACT OF DISCUSSION

Dr. Julius Friedenwald, Baltimore: Dr. Graves has clearly shown the difficulties that may arise in the diagnosis of malignant disease of the upper right quadrant. Such difficulties, however, occur not only in the diagnosis of malignant disease but also with benign lesions. When one takes into consideration how extremely difficult it may become to differentiate, for instance, between duodenal ulcer and cholecystitis at times, and that even after a thorough clinical study, including roentgen-ray examination, the diagnosis can be established only after exploratory incision, it may be readily understood how much more complicated the diagnosis of malignant disease in this area becomes. According to our experience, the greatest difficulty is noted in differentiating at times between cholelithiasis and cancer of the liver involving the common duct. In the latter affection, in its early stages, the rather characteristic attacks of biliary colic with jaundice and periods of relief point to cholelithiasis for some time until finally the symptoms of cancer become evident. The difficulties in differentiating between chronic pancreatitis and cancer of the pancreas are so well known that even following exploratory incision the diagnosis may remain uncertain. Finally, I should like again to call attention to a special train of symptoms pointing directly to cancer of the pancreas. In the earlier stages of this disease, the symptoms referable to disorder of the gastro-intestinal tract in the form of a simple dyspepsia are manifested. There is usually constipation which is rapidly transformed into diarrhea. The diarrhea becomes more and more intense and occasionally bulky, tarry and fatty stools are observed. After a longer or shorter time jaundice appears, which gradually becomes more and more pronounced. The urine at times contains sugar; the liver enlarges and becomes nodulated, and further evidences of a malignant condition are noted. This affection is of such frequent occurrence that whenever a persistent diarrhea is observed in persons over 40 years of age which cannot be accounted for by the usual causes, carcinoma of the pancreas should be borne in mind. The newer methods of examination, that is, cholecystography, the liver functional tests, the examination for the duodenal ferments obtained by means of the duodenal tube as well as the Lyon method of biliary drainage, have added materially to our means of diagnosis; but, when all is said and done, the greatest reliance in diagnosis must be based, as Dr. Graves has said, on a carefully obtained history, with a thorough physical examination.

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[13] Slesinger, E. G.: M. J. & Record **120:** 17 (July 16) 1924.

[14] Erdmann, J. F., and Carter, R. F.: New York M. J. **115:** 649 (June 7) 1922.

[15] Jones, D. F., and Hayden, E. P.: Boston M. & S. J. **191:** 471 (Sept. 11) 1924.

SKIN TESTS IN MEASLES *

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AND
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In skin tests with killed cultures of the green-producing diplococcus from measles, Tunnicliff [1] obtained positive reactions in 100 per cent of persons who had not had measles, and in only 4 per cent of those with a history of measles. This intracellular toxin was neutralized in persons with a negative history of measles by convalescent human measles serum, but not by the serum of a person who had not had measles. The toxin was neutralized in rabbits by convalescent human measles serum and by the serum of goats convalescing from the reaction produced by measles diplococci, but not by normal goat serum. The measles toxin produced reactions in normal rabbits, but not in rabbits immunized against measles. Berkefeld W filtrates of cultures of measles diplococci failed to produce any reactions.

Recently, Ferry and Fisher [2] have demonstrated an extracellular toxin in filtered cultures of green-producing streptococci from measles with which they produce skin reactions in 40 per cent of persons with a negative history of measles and in only 3 per cent of persons with a history of measles.

Since most of the filtrates used by us were from cultures containing ascites fluid from adults who had probably had measles, it was thought possible that the ascites fluid neutralized the extracellular toxin as formed. Another attempt has now been made to produce an extracellular toxin with the strain of measles diplococcus whose intracellular toxin produced the specific skin reactions in the previous experiments. Filtrates of 0.2 per cent dextrose broth cultures grown six days at 36 C. produced no extracellular toxins, but filtrates of cultures grown six or seven days in 1 per cent sheep blood, 0.2 per cent dextrose broth, gave a definite reaction in a dilution of 1:10. One-tenth cubic centimeter of the toxin was injected intradermally and the test read after eight hours and again after twenty-one hours. The reaction consisted of a circumscribed area of erythema about 1 cm. in diameter. There was no reaction with the toxin boiled one hour and used as a control, except occasionally. The tests in individuals showing these pseudoreactions were not included. Of twenty persons who gave a history of not having had measles, ten gave positive reactions. One of these positive tests was in an infant 4 months old. Two of the children with positive skin tests showed no reaction on later receiving two more skin tests. A nurse with a negative history of measles and with a history of repeated exposure gave a negative skin test. None of the twelve persons with a history of measles gave positive skin reactions. The tests, with the exception noted, were given to persons over 1 year old.

The extracellular toxin was neutralized by convalescent human measles serum and by the serum of a goat immunized with green-producing measles diplococci, but not by normal goat serum. The mixtures of equal parts of toxin and serum were incubated one hour, and 0.1 cc. was injected intradermally. The mixtures with goat serum were injected into rabbits, those with human serum into human beings.

These experiments show that skin tests with extracellular diplococcus toxin (filtrate) give positive skin reactions in 50 per cent of persons who have not had measles. This is a slightly higher percentage of positive reactions than that obtained by Ferry and Fisher,[2] but both are much lower than the 100 per cent of positive reactions observed by Tunnicliff by the use of intracellular toxins. Since about 98 per cent of all persons over 6 months old are susceptible to measles, one would expect positive skin reactions in this percentage of persons who had not had measles.

CONCLUSIONS

The green-producing diplococcus associated with measles produces an extracellular toxin which gives a definite specific skin reaction in persons with a negative history of measles, but not in those with a positive history. The toxin is neutralized by convalescent human measles serum and by the serum of goats immunized with measles diplococci, but not by normal goat serum.

These experiments indicate that antigens of killed measles diplococci (intracellular toxin) would be more effective for susceptibility tests than extracellular toxins on account of the former giving positive skin tests in about twice as many persons susceptible to measles as intracellular toxins (filtrates).

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* From the John McCormick Institute for Infectious Diseases.

[1] Tunnicliff, Ruth: J. Infect. Dis. **37**: 193 (Sept.) 1925.

[2] Ferry, N. S., and Fisher, L. W.: Measles Toxin, J. A. M. A. **86**: 932 (March 27) 1926.

Ulcer of the Stomach.—A diagnosis of ulcer of the stomach, pylorus or duodenum can frequently be made by the duodenal bucket and the string test. The bucket under these conditions contains a bile-stained fluid, the string next to the bucket is golden yellow, and there is on the string a localized blood stain at some distance from the lips (from 15 to 24 inches); if the stain is situated between 15 and 16 inches it indicates a cardiac, between 16 and 21 a lesser curvature, between 21 and 22 pyloric, and between 22 and 24 duodenal ulcer. The bucket returning with bile, and the string being golden yellow below 23 inches from the lips, indicates permeability of the pylorus for the bucket (size 23 French). The bucket having sojourned in the digestive tract from eight to ten hours (over night) with a length of string measuring from the lips more than 25 inches, without bile in the bucket or a yellow color of the string next to it, indicates pyloric stenosis (excepting in cases of jaundice).—Einhorn, Max: The Duodenal Tube; F. A. Davis Company, 1926.

ETIOLOGY AND DIAGNOSIS OF INTRA-UTERINE FETAL DEATH

REPORT OF CASE, WITH EXPERIMENTAL STUDY *

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AND
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Fetal syphilis, fetal anomalies, toxemias of pregnancy and maternal acute infections have long been recognized as causes of intra-uterine fetal death at any time during pregnancy. When no cause could be demonstrated for the death of the fetus, cases were classified as idiopathic. In the last decade certain observers, namely, De Lee[1] and Curtis,[2] have assumed and have more or less completely verified infectious organisms as the cause for intra-uterine fetal death. Of necessity, the verification beyond a reasonable doubt of such organisms being the cause of the death of the fetus in utero presents numerous obstacles, and in many instances only probable or presumable data can be obtained in support of such a view. It would seem important, in view of the limited number of cases on record, to study as completely as possible cases that give indication of falling into this class, and to place them on record. It was with this idea in mind that we present the results of study of the following case:

REPORT OF CASE AND EXPERIMENTS

A primipara, an American, aged 18, whose family and past medical and surgical histories were essentially negative, entered the University Hospital and on examination was found about twenty-nine weeks pregnant. The history of the pregnancy was normal up to admission to the hospital. Examination revealed normal heart and lungs. The teeth were in good condition, and roentgen-ray examination showed no apical infection. No evidence of venereal disease was present. The position of the fetus in utero was occiput right anterior; the head was not engaged, and the fetal heart tones were clear, 152 to the minute. The mother's pulse was 88; the temperature, 98.2; respirations, 22. The systolic blood pressure was 120; diastolic, 60. The routine weekly antepartum urine examinations were negative. Culture of the urine twelve days post partum was sterile and a direct smear of the centrifugalized sediment showed no organisms. Blood examination showed: red blood cells, 4,210,000; hemoglobin, 90 per cent, and white blood cells, 7,800. The Wassermann reaction was negative, February 17, March 31 and April 20, 1926. Cultures of the nose, throat and cervix were negative for streptococci.

March 18, a routine antepartum examination revealed beginning engagement, with the position occiput anterior and left, and the heart tones, 164. The systolic blood pressure was 134; diastolic, 66.

March 26, the head was not engaged; the position was occiput right anterior, and the fetal heart tones were not heard. The patient complained of not having felt fetal movements for three days.

March 27, definite crepitus was obtained on grasping the fetal head through the abdominal wall, indicating maceration of the head. Roentgenograms revealed definite overriding of the bones of the skull, indicating shrinkage of the cranial content due to maceration, as first described by Spalding.[3] The long bones showed no widening of Guérin's line. Spontaneous labor did *not* supervene, so Watson's method of inducing labor was tried and the patient delivered a macerated fetus after craniotomy when the head reached the perineum, April 3. The fetus showed no deformity; the placenta and cord showed no anomalies, and the cord was *not* about the neck of the fetus. The puerperium was symptomless and afebrile. The necropsy report of the fetus revealed the weight to be 1,644 Gm. with nothing to account for the death, except that a culture of the heart's blood revealed a hemolytic streptococcus. The tissues were so badly macerated that gross evidence of bacterial pathologic change was not distinguishable. A Levaditi stain on the suprarenal tissue showed no spirochetes.

In considering the necropsy report of the fetus, it was thought valuable to determine whether the streptococcus recovered from the fetus would produce intra-uterine fetal death when injected into pregnant animals. On culture, the organism grew comparatively rapidly with a very definite zone of hemolysis surrounding the colonies, and microscopically was found to be gram-positive and to grow in long chains. Twenty-four hour dextrose meat infusion cultures of this organism were made and used for intravenous injection into pregnant rabbits.

In rabbit 1, which was about twelve days pregnant, 0.5 cc. of the culture was injected into the ear vein. The rabbit showed no symptoms following injection, and four days later a similar dose was injected, without symptoms appearing. Two days after the second injection, a necropsy was done on the rabbit, and no evidence of visceral pathologic change was found except that the right horn of the uterus showed five, and the left horn, two, nodules which were twice the diameter of the rest of the uterus. The veins of the broad ligaments on each side were thrombosed in places and distended in others, and over one or two of the nodules on the peritoneal surface were noted small amounts of fibrin. There were no adhesions present. On cut section, these nodules showed marked thickening of the lining membrane of the uterus, but no evidence of fetuses. Microscopic examination showed hyperplasia of the muscularis and mucosa.

In rabbit 2, 0.8 cc. of the culture was injected into the ear vein, and two days later the animal was anesthetized, laparotomy was performed, and the uterus delivered. The fetuses showed no sign of life, either in the uterus or when delivered by section of it. Cross incision of the superficial arteries of one fetus showed no bleeding, indicating lack of circulation. The rabbit was killed and the uterus removed, after a culture was taken from the amniotic fluid and a vein in the broad ligament. The viscera showed no pathologic change other than slight parenchymatous degeneration of the liver, spleen and kidney. After incubation of forty-eight hours, the cultures from the amniotic fluid, the broad ligament vein and the heart's blood showed pure cultures of a hemolytic streptococcus, which had the cultural and microscopic characteristics of the organism injected. This rabbit was three weeks pregnant.

In rabbit 3, about three weeks pregnant, 0.8 cc. of the culture was injected into the ear vein, and one week later the rabbit was anesthetized, laparotomy was performed and the uterus delivered. The fetuses were living, as evidenced by movements within the uterus and attempts at respiration after delivery by section. The rabbit was killed and a necropsy done, but no evidence of gross visceral pathologic change was found. Cultures were taken from a vein in the broad ligament and the amniotic fluid and remained sterile after forty-eight hours' incubation.

In rabbit 4, about three weeks pregnant, 2.4 cc. of the culture was injected into the ear vein. During the ensuing thirty-six hours the rabbit seemed to be somewhat sick, and at the end of forty-four hours was found to have miscarried six dead fetuses. Cultures from the peritoneal fluid of these fetuses remained sterile after forty-eight hours, but a direct smear revealed a streptococcus which was microscopically identical with the organism injected.

COMMENT

In rabbit 1, nodulation of the uterus at necropsy was the only evidence remaining of pregnancy. The length of time between injection and necropsy might very well have been sufficient for complete absorption of the fetuses to occur in a pregnancy of less than two weeks.

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* From the Department of Obstetrics, State University of Iowa College of Medicine.

[1] De Lee, J. B.: A Bacteriologic Study of the Causes of Some Stillbirths, J. A. M. A. **67**: 344 (July 29) 1916.

[2] Curtis, A. H.: Streptococcus Infection as a Cause of Spontaneous Abortion, J. A. M. A. **67**: 1739 (Dec. 9) 1916; Spontaneous Recurrent Abortion, ibid. **84**: 1262 (April 25) 1925.

[3] Spalding, A. B.: A Pathognomonic Sign of Intra-Uterine Death, Surg. Gynec. Obst. **34**: 754 (June) 1922.

Our inference was that this had occurred. Rabbit 2 showed the fetuses dead in utero at laparotomy, with streptococci in pure culture in the amniotic fluid and uterine circulation, giving strong evidence that intra-uterine fetal death was due to the organism injected. The presence of living fetuses in rabbit 3, plus the absence of streptococci in the amniotic fluid and uterine circulation, while a negative result, is in direct contrast to rabbit 2. Why intra-uterine fetal death in rabbit 3 did not occur is a question, but might be hypothetically explained by assuming the failure of the organism to reach the uterine circulation. By tripling the dose in rabbit 4, spontaneous abortion was produced and the organism demonstrated in the fetuses. Rabbit 4 remained living and well.

This experience with animal inoculation furnishes confirmatory evidence that the cause of intra-uterine fetal death was probably the streptococcus found in the fetus.

CONCLUSION

In a clinically healthy mother, a fetus apparently succumbed in utero to a hematogenous streptococcal infection.

Clinical Notes, Suggestions and New Instruments

NATIVE INFESTATION BY THE FISH TAPEWORM, DIPHYLLOBOTHRIUM LATUM

REPORT OF A CASE IN DETROIT

David J. Levy, M.D., and Merle Pierson, M.D., Detroit

This case of native infestation by the fish tapeworm, *Diphyllobothrium latum*, is reported for the purpose of adding a tenth case to the literature, and as bearing on the prognostication made by Warthin,[1] and again by Lyon[2] as to an increase of the native occurrence of this parasite to be awaited in the Great Lakes region. Warthin investigated and reported in 1912 on the frequent incidence of *Diphyllobothrium latum* infestation in foreign born Swedes and Finns in northern Michigan, and the finding of the larvae of *Diphyllobothrium latum* in fish caught in sewage-contaminated water in districts occupied by immigrants of these nationalities. He proved the existence of all conditions prerequisite to the transmission of the parasite through the eating of native fish, and forecast an increasing incidence of such occurrence. The literature is adequately referred to in the recent paper by Lyon, and will not be reviewed here.

The patient, a girl, was born of Jewish parents, March 27, 1922, in Detroit. The parents were both born in Russia but have been in this country since 1906. No member of the family gives a history of having had a tapeworm. Except for two summers in Atlantic City, the child has always lived in Detroit. However, the father was certain that she had never eaten fish at the former place, although she had been given fish, some of it raw, at times since she was a year old. The fish was all procured from local markets. None of it was smoked and none of it was imported.

The child was brought to the office for examination, Jan. 9, 1925, with a history of having passed, about three months previously, several feet of tapeworm, and again, three weeks previously, from 10 to 15 yards of the parasite. The father, who is a druggist, had thereupon administered santonin to the child. During the subsequent weeks, the child had been constipated and had been restless and irritable, with slight elevations of temperature. The child was pale and somewhat undernourished, and weighed 25 pounds (11.3 kg.). The rectal temperature was 100 F. She had reddened hypertrophic tonsils; save for this fact, the physical examination was negative. At this time, her hemoglobin was 90 per cent; the white cells were normal in number and differential count, and the red cells on microscopic examination showed no undue paleness or asymmetry. Unfortunately, a count of the red cells was not made. A salicylate was ordered for the relief of the mild tonsillitis, and aspidium was prescribed to be given on the subsidence of this acute attack.

The child was seen again, January 26, with a history of having had frequent attacks of cramplike abdominal pains since the foregoing visit, so that the vermifuge had not been administered. A stool specimen submitted at this time showed numerous ova of *Diphyllobothrium*. The white cells numbered 10,000 per cubic millimeter, with 68 per cent polymorphonuclears. Because of the symptoms suggestive of appendicitis in the case, a roentgenogram of the gastro-intestinal tract was ordered and the following conclusions as to the roentgen-ray examination were submitted by Drs. Hickey, Evans and Reynolds:

"We would conclude from this patient's gastro-intestinal examination that there is no organic lesion of the stomach, duodenum or small or large bowels. The stomach is of average size and it emptied its contents at an even rate. There was normal motility of the barium through the small intestine. There was considerable colonic retention of barium in the lumen of the appendix, and there was pericecal and periappendical tenderness. These are the usual findings in chronic appendicitis."

January 31, the father reported that the child had severe abdominal pain on taking a cathartic, and she was refered to the surgeon for examination as to her appendix. A diagnosis of chronic appendicitis was made by him. On the subsidence of the abdominal symptoms aspidium was administered, but the child did not pass the worm. Late in February, the child had an acute upper respiratory infection, and paracentesis of the ears was performed. Subsequent to this, the child was given aspidium in the same dosage, 15 minims (1 cc.) as previously. She thereupon passed the worm, the segments of which tapered down to 1 mm., although no head was found. The specimen of tapeworm was submitted to Dr. A. S. Warthin for identification, who confirmed our recognition of the worm as *Diphyllobothrium latum*. It is of interest and importance to note that with the passing of the worm all appendicitis-like abdominal pain disappeared and has not recurred to this date (May 19, 1926). During the summer of 1925 the child was examined by another physician who, on the strength of the history of tapeworm, gave another course of aspidium without, however, bringing forth any further segments of worm.

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[1] Warthin, A. S.: Pub. Health, Michigan **7**: 78 (Jan.-March) 1912.

[2] Lyon, M. W., Jr.: Native Case of Infestation by the Fish Tapeworm, Diphyllobothrium Latum, J. A. M. A. **86**: 264 (Jan. 23) 1926.

HUMAN INFECTION WITH BRUCELLA MELITENSIS, VARIETY ABORTUS, TREATED WITH MERCUROCHROME

E. E. Gage, M.D., and D. A. Gregory, M.D., Sioux Falls, S. D.

The bacteriology of the organisms causing Malta fever and infectious abortion of cattle has been extensively studied, especially by Evans,[1] who has classified them into three main groups. Using forty strains, she showed that the majority of human, bovine, porcine, equine and caprine strains of organisms of the genus *Brucella* could be separated into three main groups.

The majority of bovine and porcine strains fall into a group designated as *Brucella melitensis*, variety *abortus*. This includes the organism of infectious abortion of cattle, which was known as *B. abortus* (Bang).

A second large group includes strains from human, caprine, bovine and equine origins and is designated as variety *melitensis* A.

A third group, characterized by the occurrence of coccoid forms, is probably the variety that Bruce was working with when he discovered his *Micrococcus melitensis*. It is designated variety *melitensis* B.

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[1] Evans, Alice C.: The Nomenclature of the Melitensis Abortus Group of Bacterial Organisms, Pub. Health Rep. **38**: 1943-1948 (Aug 24) 1923; The Serological Classification of *Brucella Melitensis* from Human, Bovine, Caprine, Porcine and Equine Sources, ibid. **38**: 1948-1953 (Aug. 24) 1923; Malta Fever: Cattle Suggested as a Possible Source of Infection, Following a Serological Study of Human Serums, ibid. **39**: 501-518 (March 14) 1924.

Simple agglutination tests do not differentiate these varieties, and it is necessary to do absorption of the agglutinins to differentiate the organism known as *B. abortus* (Bang) from that causing true Malta fever.

Malta fever has been reported from the United States, especially the Southwest. I cannot find any reference to its having been previously reported from South Dakota. Lake[2] reviewed the history of Malta fever in the United States.

Keefer[3] has reported a case of Malta fever, variety *abortus*, in which the infection was contracted in Baltimore. This is the first case of this type to be reported in the United States.

The case reported was observed about three months:

H. M., a white man, aged 33, married, seen by one of us (E. E. G.) about March 20, 1924, complained of aching of the back and legs, chills, fever and sweats. He had been sick for three or four days, with gradual onset characterized by headache and malaise, and suffered from constipation. He was treated symptomatically at home for several days, as the physical examination was negative. He improved, but several days later his symptoms recurred and blood cultures were made. These were reported negative after three days' incubation. The blood count and urine were normal. The Wassermann reaction was negative. Casual reexamination of the old blood cultures showed a small, gram-negative nonmotile organism not fermenting carbohydrates. This organism was agglutinated by the patient's serum in high dilutions. From April 18, 1924, to April 24, 1924, he was a patient in McKennon Hospital. Physical examination was negative. Laboratory examinations were negative except for the positive blood culture, which was repeated with positive results and the agglutination reaction against the isolated organism. His temperature ranged to 103 F., pulse to 100 maximum. He was discharged, April 24, improved, with normal temperature. He was readmitted, May 13, with temperature 101.4 F. and pulse 100. While at home his headache, fever and sweats recurred. May 18, confirmation was received from the Hygienic Laboratory that the culture was *Brucella melitensis*, variety *abortus*. May 16 and May 22 he was given 0.2 Gm. of neutral acriflavine intravenously, but it had no effect on the disease. June 2 he was given 0.22 Gm. of mercurochrome-220 soluble intravenously. This was followed by a severe chill, vomiting, bloody diarrhea and a marked decrease in urinary output. He was given Fisher's solution intravenously with rapid recovery and left the hospital, June 5. He was afebrile at that time and has remained so since.

Type strains of *Brucella melitensis*, var. *abortus*, var. A and B, were obtained from the Hygienic Laboratory and absorption tests showed that the agglutinins of this patient's serum were absorbed for all varieties by the strain isolated and by the stock *abortus* strain, and only partially by the other two varieties.

Investigation showed that this patient had worked only in the hog killing department for the past five years. This is probably the source of the infection, as Weeter[4] showed that nongravid swine uteri may contain *B. abortus* (Bang).

Two cows that he was accustomed to milk were tested and did not show any agglutinins for *Brucella melitensis* in their blood. He was not in contact with goats.

It is interesting to note that neither Keefer's patient nor ours showed an enlarged spleen.

The symptoms of the case would confuse the diagnosis, as typhoid and tuberculosis were both suspected.

The patient's occupation brought his case before the board of civil service commissioners, who at first held that the disability did not arise out of the employment. If this should be brought before a workmen's compensation commission it would be interesting to see whether the commission held that it was an occupational disease, as I think it was in this case.

The infectivity of the *abortus* strain must be low for human beings, as the disease is not uncommon in dairy herds and much unpasteurized milk is sold.

New and Nonofficial Remedies

EPHEDRINE

Preliminary Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following statement of the experimental status of ephedrine.

W. A. PUCKNER, Secretary.

Ephedrine is an alkaloid first obtained by Nagai in 1887 from the Chinese drug ma huang, identified botanically as *Ephedra equisetina*, Bunge, and some other species of Ephedra.

Chemically, ephedrine is closely related to epinephrine. Ephedrine hydrochloride and ephedrine sulphate are soluble in water and alcohol. As the salts of epinephrine are levorotatory, so the salts of ephedrine deflect polarized light to the left; they differ from epinephrine salts in being more stable; the solutions are quite stable even on boiling. A 5 per cent solution of ephedrine hydrochloride kept at room temperature has been found unchanged at the end of six months. Ephedrine is stated to excite the sympathetic nervous system, and is claimed to produce a variety of effects similar to epinephrine. It also has been found to exert a direct depressant action on smooth and cardiac muscle. Its most important effects thus far reported consist in a rather lasting rise of blood pressure, on intravenous or intramuscular injection, due mainly to vasoconstriction. Other effects similar to epinephrine are dilatation of the bronchi and mydriasis after local or systemic administration. On local application it constricts the capillaries moderately. While it is not a styptic, it is reported to be of value in reducing swelling of the turbinated bodies and in diminishing hyperemia.

Salts of ephedrine are quite effective whether given orally, subcutaneously, intramuscularly, intravenously or by any ordinary path of administration.

Clinically, promising results have been reported from the use of ephedrine, especially in asthma and for shrinking the turbinated bodies. The average dose of the sulphate or hydrochloride is 0.06 Gm. (1 grain). This dose is usually adequate to relieve an attack of asthma.

Ephedrine is not very toxic to rabbits. Clinically, only minor side actions have been reported; one physician who gave in some cases more than 0.2 Gm. a day (which is more than recommended) reports that three out of twenty patients experienced nausea, bladder irritation and headache, which may have been due to other causes.

Ephedrine is being subjected actively to pharmacologic and clinical study. Further clinical work is required to establish the therapeutic usefulness of the drug.

The clinical trials which have been reported in this country have been carried out with ephedrine sulphate made in the laboratories of the Peking Union Medical College. The Council is informed that an American firm, the Abbott Laboratories, Chicago, will shortly be in a position to supply a salt of ephedrine obtained from this source.

Burroughs, Wellcome & Company of London, England, supplies ephedrine hydrochloride for experimental purposes. It has sent to the Council a specimen of the product and the tests and standards that are used for its control.

Eli Lilly and Company has announced that it is marketing ephedrine sulphate, containing a small amount of pseudoephedrine, under the name "Fedrin." The Council is considering the question of recognizing the proprietary name for this product, and the evidence for its value and control.

At the request of the Council, the A. M. A. Chemical Laboratory has taken up the establishment of standards for ephedrine hydrochloride and ephedrine sulphate. The importance of standardization is shown by a report received by the Council which brings out that a specimen, said to be ephedrine hydrochloride, was supplied by an American firm to a physician and turned out not to have the actions of ephedrine.

The Council has postponed the acceptance of ephedrine or its salts for N. N. R. to await confirmatory clinical evidence, and until acceptable brands of the drug are made available.

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[2] Lake, G. C.: Malta Fever in Southwestern United States, Pub. Health Rep. **37**: 2895-2899 (Nov. 24) 1922.

[3] Keefer, C. S.: Report of a Case of Malta Fever Originating in Baltimore, Maryland, Bull. Johns Hopkins Hosp. **35**: 6 (Jan.) 1924.

[4] Weeter, H. M.: Infectious Abortion in Domestic Animals, J. Infect. Dis. **32**: 401-416 (June) 1923.

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SATURDAY, SEPTEMBER 11, 1926

CHEMISTRY IN AMERICA, 1876-1926

This week the American Chemical Society celebrates its golden jubilee, with the presence at its session in Philadelphia of renowned chemists from all the chemical centers of the world. From a membership of 230 in 1876, the society has grown to 15,000—the largest chemical society in the world and the third largest scientific organization in America, the American Medical Association being first.

Fifty years ago, chemistry was laying the foundation for its brilliant achievements. At the first meeting of the society in 1876, the disclosure was made of the discovery of a gas in uranite; the subsequent classic work of the Curies on radium has clarified what seemed at that time to be a mystery. At the same meeting, Morgan described the extraction of indigotine from indigo. The splendid work in Germany of Baeyer and others on the synthesis of indigo, which was responsible for making Germany supreme in chemistry for years, had not even been begun. To physicians it is especially interesting to note the paper on "A New Apparatus and Improved Method for the Estimation of Urea"; the modern work of the Folin and Van Slyke schools in this day shows the advancement in both refinement and simplification of clinical chemistry, which in turn has led to a vastly fuller appreciation by the physician and laboratory investigator of the intricacies of metabolism. Interesting also is the discussion of 1876 of the work on "Experimental Imitation of Protoplasm"—interesting because the same title might be given today, though the background now is vastly more resourceful than that of five decades ago. So the progress in the various branches of chemistry[1] in this span have been truly remarkable: mineral chemistry, which has made possible this automotive age; physical chemistry, probably the most essential branch for the further study of the human cell, which has conquered difficulty after difficulty—unheard of yesterday was the familiar "ion" of today or the p_H so glibly used by present-day medical research workers. Organic chemistry has left its stamp most indelibly on the medical profession. Fifty years ago the pharmacopeia contained drugs largely of vegetable origin; then came the flood of organic synthetics from abroad—good and bad—which fortunately of recent years, as a result of the ingenuity of American chemistry, are being superseded by domestic synthetics, fewer in number but greater in promise of therapeutic merit.[2] No longer the indefinite impure extract but the active substance is the gold of materia medica today; still fresh in our minds is the recent announcement of the preparation of crystalline insulin.[3] Fifty years from now, it is not too much to hope, the indefinite vaccine will have passed through its period of refinement.

As far as influence on medicine and health are concerned, the greatest strides have been made in the field of physiologic chemistry and nutrition. Most of the important biochemical advances have been made in America, though to stop with this statement would be unfair, because the part Germany played in educating American chemists stands out strongly. Yet it is with pride that we can point to the far reaching American discoveries made by the physicians and chemists in the fields of metabolism, vitamins, irradiation and organotherapy. A development that is characteristic in chemistry as well as in medicine has been the tendency to specialization. Fifty years ago the term "chemist" indicated a scientist with an encyclopedic mind, versed in all branches of chemistry, analytic, organic or general. Today it is difficult, if, indeed, not impossible, for a man to be master of any one branch of chemical science. In addition to the fields already mentioned, chemistry has influenced the development of agriculture, industry and education.

The physicians of America congratulate the chemists whose privilege it is to reveal in a golden jubilee a picture of their major accomplishments.

CLINICAL ASPECTS OF CHLORIDES IN THE BODY

The researches of recent years have afforded abundant illustration of the tendency of the living organism to maintain an effective neutrality regulation. Accumulation of acid or base in undue amounts is betrayed not primarily by noteworthy changes in the reaction of the circulating fluids of the body, but rather by a physiologic effort to dispose of or neutralize the undesired excesses. Under such circumstances the urine may carry away considerable quantities of acid-reacting compounds. The presence of an unusual amount of acid ions in the blood leads to augmentation of respiration, a process that dispels the volatile carbon dioxide from the system and thus tends to reduce the actual acidity that induced the change.

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[1] Excellent reviews of the advances, particularly from an academic standpoint, are given in the commemoration volume, Journal of the American Chemical Society, Aug. 20, 1926.

[2] Leech, P. N.: Standardization and Evaluation of Medicinals, Indust. & Engin. Chem., September, 1926.

[3] Crystalline Insulin—Another Chemical Triumph, editorial, J. A. M. A. 86: 350 (Jan. 30) 1926.

Fixed acidic factors thus leave through the kidneys, while volatile ones find an exit by way of the lungs. The outcome in either event is a tendency toward the restoration of the normal physiologic reaction or hydrogen ion concentration. Excess of base is compensated for by production and retention of acid derivatives of metabolism in some instances.

Biochemical investigation is at present bringing to light the importance of chloride as well as bicarbonate in the regulatory functions.[1] It is further indicating the significance of the attempted maintenance of a "normal" total salt or electrolyte concentration of the blood. This is a feature, related to the osmotic pressure of the fluid, that was stressed a few years ago more than it is today. Chlorides, omnipresent in the blood and body fluids, are significantly involved in this manifestation of electrolyte concentration. It has long been recognized that the body conserves its chlorides when their intake is greatly decreased; thus, in starvation or on a salt-free diet the urinary secretion of chloride is reduced to a minimal quantity. But chloride may be lost to the organism in less readily suspected ways, such as through severe diarrhea or vomiting. The latter sometimes occurs in cases of pyloric or intestinal obstruction.

The consequences of such events have been depicted by Hartmann and Smyth[2] as the outcome of clinical studies in the Department of Pediatrics of the Washington University School of Medicine at St. Louis. As chloride diminishes in the blood because of losses from the body, bicarbonate is retained and compensates at least in part for the deficiency in electrolyte, so that the total salt concentration still remains nearly normal. The St. Louis investigators have made the added significant discovery that when the loss of sodium chloride in the blood is not fully replaced by sodium bicarbonate, the nonprotein nitrogen becomes elevated in the evident effort to keep the osmotic pressure normal. The assumption that urea, for example, may be retained in the blood, not merely because of defective renal function but also in order to preserve osmotic equilibrium in the blood when there is a shortage of chloride and bicarbonate challenges attention.

Treatment with chloride is thus brought into a new prominence. When the deficiency of sodium chloride in the blood disappears as a result of the administration of the salt, the excess of nonprotein nitrogen and sodium bicarbonate in the blood is rapidly excreted through the kidneys. According to Hartmann and Smyth, excretion of sodium bicarbonate, sodium chloride and nonprotein nitrogen depends on the total concentration of crystalloid—electrolyte and nonelectrolyte—in the blood. When this concentration is less than normal, sodium bicarbonate is retained in the blood, and the urine remains acid in reaction despite the existence of a greatly increased plasma content of carbon dioxide. Plasma chloride is assuming an undeniable place of importance in the scheme of clinical diagnosis. The chlorides have their proper place not only in acid-base adjustments but also in the preservation of conditions that enable the body to hold its normal water content.

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[1] Chloride in Diabetic Acidosis, editorial, J. A. M. A. **86**: 752 (March 13) 1926

[2] Hartmann, A. F., and Smyth, F. S.: Chemical Changes in the Body Occurring as the Result of Vomiting, Am. J. Dis Child. **32**: 1 (July) 1926.

SYMPATHETIC RAMISECTION FOR THE RELIEF OF SPASTICITY

Is there a physiologic basis for the surgical operation of ramisectomy as a relief in spasticity of the extremities? Is the operation successful? The latter may be true without the former, but the history of the solution of other scientific problems would not bear out such a supposition. Since Hunter's untimely death, the larger number of scientific contributions have appeared from those whose conclusions diametrically oppose those of Royle and Hunter. These contributions have included both experimental and clinical data. In this issue Dr. Royle[1] presents his view of these observations, contributing, however, no further scientific facts as evidence of his beliefs.

Royle's criticisms of the work of Kanavel, Pollock and Davis are concerned for the most part with the type of animal and the method of decerebration used in their experiments, together with a statement that the patients reported on by them were not suited for the operation. In this connection it is interesting to note that the work of these observers has been fully corroborated by Ranson, Forbes and Cannon, Meek and Crawford and others. Forbes and Cannon[2] used cats in their experiments and decerebrated their animals by the Sherrington method, which of course is the method used by Royle. Their statement that "if there were a physiologic phenomenon of significance for mammals in general and therefore having a bearing on human surgery, it should be possible to demonstrate it in the cat" is quite applicable. It is also interesting to note that in their report of the three patients operated on eighteen months previously, Davis and Kanavel have stated that two of the patients were operated on by Dr. Royle and that all three had been chosen by him from a large group of children as the cases most suitable for operation.

Not all the evidence contrary to the practice of Royle and the theory of Hunter has been confined to this country. In an interesting symposium on the "Sympathetic Innervation of Striated Muscle" presented before the Section of Neurology of the Royal Society of Medicine, Bankart and Jefferson[3] reported on the result of their operative procedures on patients with spastic extremities. Both of these surgeons make the rather bald statement that the operations did no real good. Further, considerable doubt has been thrown on the accuracy of Kulchitsky's histologic evidence and Langellan's theory of muscle tone, on both of which premises much of Hunter's theory was based. As Walshe has pointed out, Trendelenburg twenty years ago performed experiments on the wing of the fowl similar to those of Hunter but with opposite results. It has been suggested and may be repeated frequently and appropriately that in the absence of published careful anatomic control observations, injury to the ventral root provided a probable explanation of Hunter's results.

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[1] Royle, N. D.: The Surgical Treatment of Spastic Paralysis by Sympathetic Ramisection, Correspondence, this issue, p. 868.

[2] Forbes, Alexander; Cannon, W. B.; O'Connor, J.; Hopkins, A. M., and Miller, R. H.: Muscular Rigidity With and Without Sympathetic Innervation, Arch. Surg. **13**: 303 (Sept.) 1926.

[3] Bankart and Jefferson: Proc. Roy. Soc. Med. **19**, August, 1926, Sec. Neurol.

It would seem that the most aid that could be given in support of the theoretical and practical aspects of the subject might come from added reports of carefully controlled scientific experimental and clinical observations. The final conclusion of Forbes and Cannon is a challenge to the supporters of this theory to produce just such work. It bears repetition: "We conclude that if there is any loss of tonus in consequence of the operation it is insignificant. Certainly decerebrate rigidity persists, at least approximately undiminished, and manifests its plastic features after sympathectomy. This conclusion removes the alleged physiologic basis for the surgical operation of ramisection as a cure for spasticity. If patients are in reality improved in consequence of this operation, it is probably due to some incidental feature of their treatment, and not to the interruption of nerve impulses arising in the sympathetic nervous system."

VITAMIN B AND GASTRIC MOTILITY

The pathogenesis of the various conditions now commonly classed as avitaminoses is by no means clear as yet. For the most part, information is restricted to the description of symptoms that are characteristic of the disordered nutritive condition following a prolonged lack of any of the familiar vitamins. Xerophthalmia and the lesions of scurvy are illustrative of this statement. The studies of Wolbach and his co-workers at the Harvard Medical School[1] have greatly advanced our knowledge of the tissue upsets that may arise when there is a deficiency of vitamin A and vitamin C, respectively, in the diet. The function of vitamin B remains more obscure, though there has not been a lack of hypothesis to account for the behavior of this more ubiquitous food factor. Thus, Cramer[2] and his associates in London believe that vitamin B functions in a peculiarly specific manner to promote the activity of the lymphoid tissues; and they attribute the alimentary disturbances characteristic of B avitaminosis to altered function of these structures. A recent writer has remarked, however, that even though the pathologic findings of Cramer with respect to the lymph nodes located along the alimentary tract should be correct, they would not prove that the primary organic factor in the avitaminosis is failure of the lymphoid tissue to act in a normal manner. McCarrison and others have observed that hypertrophy of the suprarenal glands is characteristic of conditions associated with a deficiency of vitamin B, so that one would be equally justified perhaps in attributing the symptoms to suprarenal dysfunction. Recently it has also been suggested that vitamin B may be the precursor of certain alimentary enzymes.[3]

Experimentally it has been demonstrated, notably by Karr[4] and Cowgill[5] at Yale University, that a progressive loss of appetite attends the institution of a regimen poor in vitamin B. The investigations of Cowgill, Deuel, Plummer and Messer[6] suggest that this may be associated in some way with the "hunger contractions" characteristic of the empty stomach. In mild cases of experimental vitamin B deficiency associated with anorexia, they did not observe any remarkable change in these contractions. The rhythmic tonus so carefully described by Carlson is frequently absent, and the number of contractions in a series may be somewhat less. In severe cases of this deficiency, however, in which anorexia is attended with nervous and muscular symptoms, there is gastric atony. Successful vitamin therapy applied to such conditions is associated with a rapid improvement in tone of the stomach musculature. Furthermore, the continued feeding of liberal quantities of vitamin B to an organism subsisting on a diet adequate in other respects aids in maintaining a satisfactory gastric tonicity.

The investigators[6] of these phenomena frankly admit that it is difficult, when dealing with such a parallelism as has been described, to decide whether or not vitamin B maintains the desire to eat simply by aiding in the preservation of the normal gastric tone. The marked systemic manifestations characteristic of advanced cases of vitamin B deficiency suggest that the loss of the desire to eat in such cases is due as much to a generalized systemic disturbance as it is to an abnormal condition localized in the alimentary canal. The demonstration of gastric atony as a part of the syndrome characteristic of an advanced stage of deficiency disease in which lack of vitamin B is concerned is in harmony with clinical observations on patients with beriberi. The list of disorders attended with gastric atony is a long one, including high fever, parathyroid tetany, acute gastritis, pneumonia and general peritonitis. It is also now demonstrated to characterize prolonged subsistence on a diet poor in

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1. The Pathologic Conditions Induced by Deficiency of Vitamin A, editorial, J. A. M. A. **84**: 1827 (June 13) 1925; A New Feature of Vitamin Deficiency, ibid. **85**: 2035 (Dec. 26) 1925.

2. Cramer, W.; Drew, A. H., and Mottram, J. C.: Lancet **1**: 963 (May 27) 1921; **2**: 1902, 1922. Cramer, W.: Lancet **1**: 1046 (May 26) 1923.

3. Farmer, C. J., and Redenbaugh, H. E.: Am. J. Physiol. **75**: 45 (Dec.) 1925.

4. Karr, W. G.: J. Biol. Chem. **44**: 255 (Nov.) 1920.

5. Cowgill, G. R.: Am. J. Physiol. **57**: 420 (Oct.) 1921.

6. Cowgill, G. R.; Deuel, H. J., Jr.; Plummer, N., and Messer, F. C.: Studies in the Physiology of Vitamins, IV, Vitamin B in Relation to Gastric Motility, Am. J. Physiol. **77**: 389 (July) 1926.

vitamin B. The suggestion has been made, therefore, that the dietary factor should never be overlooked where gastric atony is known to occur. Perhaps it also is concerned in the diseases that may follow faddist inclinations leading to a limited choice of food. In any event, gastric motility and faulty diet may now be linked together in the interpretation of certain disturbing symptoms.

Current Comment

THE BASAL METABOLISM OF VARIOUS TISSUES

In recent years basal metabolism, measured by the heat production of the body at rest and without food, has come to have especial significance for the clinician. He has learned to regard the basal "metabolic rate," as it is now familiarly termed, as something characteristic and fairly fixed in periods of health. Perturbations in this rate are therefore accepted as indications of some abnormality, precisely as are the deviations of the body temperature, respiration and pulse rate from accepted averages. Where do the chemical changes that the metabolic "rate" measures take place? It is well known that the large increments associated with work are attributable to energy transformations in the contractile tissues. The muscles themselves are the seat of the calorigenic changes; indeed, the altered temperatures of these tissues and the blood perfusing them give measurable evidence of what is taking place during contraction or changes in tension such as tonus represents. The total metabolism of the active body varies in proportion to the amount of muscular work that is being accomplished. In the body at rest, however, other tissues also play a part in the heat production. A recent review[1] of the known facts indicates that the basal rate of metabolism in muscle is low, from 0.5 to 1 calory per kilogram per hour. In the liver it reaches a height of from 10 to 20 calories, and in the other viscera it averages from 2 to 3 calories. The important contribution of that metabolically busy organ, the liver, to the metabolism of the resting body thus becomes apparent, particularly when the comparatively large size of this glandular structure is recalled.

CHILD WELFARE IN NEW ZEALAND

The experience of New Zealand in regard to infant mortality has often been referred to in recent years. Numerous countries that boast of a far older civilization and are located at the very seats of modern culture and scientific research are taking to heart the fact that their records in child welfare progress are being outdone by a distant small British colony that has only modest resources. The deaths of infants under one year of age there have reached the low rate of 40, said to be a world's record. A few details of how this saving of human life has been accomplished were recently set forth by our London correspondent.[1] He finds that the foremost contributory factor is the system of training and nursing founded by Sir Truby King less than two decades ago. The method of the nurses who go out to spread the gospel of healthy babyhood seems strangely familiar even to American ears: it aims "to bring simple common sense, enlightenment, and accurate scientific knowledge and conviction as to the fundamental needs of mother and child into the homes, lay and professional." The policy is to have at least one nurse for each 230 new babies and mothers so far as the advisory service is concerned. The best recommendation is the fact that other communities are now seeking New Zealand nurses or sending their disciples to the far away islands for training. The methods have been simple rather than complicated. After reading them and studying the work of such groups as the Infant Welfare Society of Chicago, recently reported by Grulee,[2] one wonders whether undue complexity is not being introduced into some of the current welfare work. At any rate, it is refreshing to learn that even in the poorer districts of a large municipality elaborate special formulas are scarcely required for successful feeding of the young. The armamentarium, when breast feeding cannot be undertaken successfully, is a simple one: it includes merely cow's milk, water, sugar, cereals, vegetables, orange juice or tomato juice, and cod liver oil.

A NARCOTIC SURVEY OF LOUISIANA

A report of a "narcotic survey" of Louisiana has been submitted by Dr. Carleton Simon to the Louisiana State Board of Health. The Louisiana narcotic law is one of the most comprehensive of its kind, extending into the field in a way impossible for federal legislation. Even if, as Dr. Simon suggests, it is possibly without provision for enforcement by fine and imprisonment, the authority it vests in the state board of health to refuse and to revoke registration and certificates and to deny to applicants the official blanks necessary to operate under the law would seem to be sufficient to make it effective. Many physicians in the state, however, regard certain provisions of the law as oppressive and believe that cooperation between the medical profession and the state board of health would be promoted by repealing the present law. During less than a month of personal investigation, Dr. Simon reports, he talked with hundreds of addicts on the streets and in their homes, and on the basis of information thus obtained he asserts that there are thousands of street addicts buying their narcotics illicitly through the underworld throughout the state. In addition to these addicts, others seem able to obtain whatever they need to satisfy their cravings through prescriptions openly given, apparently under authority of the state law. A questionnaire sent to 1,890 physicians brought replies from 779 and showed that fifty-one physicians during 1925 treated 260 "nonmedical narcotic users." The number using narcotics in this way varied from one to sixty-four for the individual physicians from whom reports were received. An extremely large quantity of codeine is consumed in Louisiana, but this, Dr. Simon believes, has no connection with addiction. Its use has been largely increased by the reduction in available heroin as the result of federal legislation. In Dr. Simon's opinion, a connection between codeine and narcotic addiction has not been demonstrated, but the use of codeine may produce a familiarity with the action of narcotics and lead to a desire for the stronger opium derivatives. Its use is objectionable, too, in that it encourages the cultivation of the poppy plant, which the nations of the world are generally trying to limit, and stimulates the importation of opium into the United States, thus increasing the difficulties of the narcotic situation in our own country. Cannabis, in Louisiana, is covered by a special act, but Dr. Simon was unable to find any case in which the law had been enforced. It is usually imported from Mexico, where it is known as "marajuana"; but in Louisiana it is sold as "muggles," "moota" and "bombalachi." Thousands of young men and young women in Louisiana smoke cigarets of which cannabis is the active base. Dr. Simon believes that the growth of the plant is a menace, and he recommends that special attention be given to checking the increasing use of the drug.

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[1] Hunt, H. B., and Bright, E. M.: Studies of the Conditions of Activity in Endocrine Glands, XVIII, Locus of the Calorigenic Action of Adrenalin with Observations on Tissue Metabolism, Am. J. Physiol. 77:353 (July) 1926.

[1] Child Welfare in New Zealand, J. A. M. A. 87:110 (July 10) 1926.

[2] Grulee, C. G.: Infant Feeding, J. A. M. A. 87:137 (July 17) 1926.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

ARKANSAS

Personal.—Dr. Riley H. Guthrie has resigned from the staff of the state hospital for nervous diseases and has gone to Walnut Ridge to engage in private practice.——Dr. Arthur D. Gillum, Rover, has been elected a member of the Yell County Board of Education.

Better Milk for Jonesboro.—At a special session, August 19, the city council of Jonesboro passed an ordinance regulating the sale of milk in that city. All milk now must be the product of tuberculin-tested cows and must be frequently inspected by the health officer; the dairyman's name must appear on the caps of all bottles and on the wagon in which the milk is delivered, and the number of bacteria per cubic centimeter must not be more than a specified number. All persons selling milk must be licensed. The penalty for violation of the ordinance is a fine and revocation of the license. The council has attempted thus to safeguard the milk supply of Jonesboro for years, but the measure was opposed; a recent outbreak of typhoid fever demonstrated its necessity.

CALIFORNIA

Personal.—Dr. George M. Webster has been appointed superintendent of the Southern California State Hospital, Patton, to succeed the late Dr. John A. Reily.

License Revoked.—At the July meeting of the state board of medical examiners, San Francisco, the California license of Dr. Frank C. Hart of Portland, Ore., was revoked. Dr. Hart, it is reported, is now serving a sentence in Leavenworth penitentiary for violation of the Mann act.

Alfred Bach Sentenced to Road Gang.—Alfred Bach of Riverside pleaded guilty to practicing medicine without a license in connection with his sanatorium, it is reported, and was sentenced, July 23, to six months in the Riverside County road camp. Bach is said to have held himself out as a doctor of medicine and to have used the prefix "Dr." on some of his business cards.

Physician Arrested for Practicing Chiropractic.—Dr. Clarence D. Crutcher was tried in the justice's court at Indio recently on a charge of practicing chiropractic without a chiropractic license. He was found not guilty by the court. The complaint was made by an investigator of the chiropractic board of examiners who, it is reported, claimed that Dr. Crutcher had given chiropractic adjustments but had not advertised as a chiropractor.

COLORADO

Hospital News.—Beth-El Hospital, Colorado Springs, announces the opening of a $225,000 wing.——The Fort Collins Hospital, which has been operating for twenty years, was permanently closed in June.

National Methodist Sanatorium.—The first unit of the National Methodist Sanatorium at Colorado Springs has been opened to patients; the official opening will take place, November 9. When completed, this institution will have a capacity of 500 beds for tuberculosis patients and will cost $2,000,000. The first unit which has a capacity of fifty-two beds is almost entirely concrete and glass, four stories high with roof-garden and basement; there are six porches on each floor and 635 steel-sash windows in the building.

CONNECTICUT

Clinical Congress of State Society.—The papers to be presented at the second clinical congress of the Connecticut State Medical Society will be abstracted, printed and bound and a copy sent to each member of the Congress. The meetings will be held in Sprague Memorial Hall on the campus of Yale University. Meals will be served at the university dining hall, and luncheon will be provided for members of the congress without extra charge, and rooms in one of the dormitories which has been assigned for this purpose may be had for $1.50 a night. The program has already been noted in The Journal, June 19 and August 7. Any physician in good standing is invited to be a member and one has already registered from Sacramento, Calif. The fee for the Congress is $10; inquiries should be addressed to Dr. Creighton Barker, 129 Whitney Avenue, New Haven, Conn.

DISTRICT OF COLUMBIA

Personal.—Dr. Ales Hrdlicka of the Smithsonian Institution left Nome, August 20, en route to Washington, following an effort to determine the origin of the North American Indians.

ILLINOIS

Illegal Practitioner Sentenced.—John Boone, Mount Carmel, was sentenced to six months on the state penal farm about August 28, it is reported, following a plea of guilty to a charge of practicing medicine without a license.

Personal.—Dr. Earl B. Miller, Fort Lyon, Colo., has been selected as superintendent of the McDonough County Tuberculosis Sanatorium.——Dr. Isaac D. Rawlings, state health commissioner, addressed the St. Clair County Medical Society, East St. Louis, September 2, on "Preventive Medicine."

Outbreak of Food Poisoning.—At the annual picnic of the Peoria Christian Endeavor Societies, September 2, about 200 persons were stricken with food poisoning, it is reported, and about forty of them were seriously ill. A preliminary report stated that "meat loaf" prepared for the picnic caused the outbreak; an investigation is under way to determine the cause.

Society News.—The Vermilion County Medical Society held an open meeting, September 7, at Danville, which was addressed by Dr. Hiram E. Ross on "Cooperation of the Medical Profession and the Public for Better Community Health"; Dr. Frederick A. Baumgart, "Elementary Physiology"; Dr. William C. Dixon, "Milk"; Dr. Elmer B. Coolley, "Conquering Diphtheria," and Dr. Edwin C. G. Williams, "The Fly Pest."

Chicago

Klemens Ramashauskas Charged with Manslaughter.—A Klemens S. Ramashauskas to the grand coroner's jury held Klemens S. Ramashauskas September 6, it is jury on the charge of manslaughter, September 6, it is jury on the charge of manslaughter, for whom reported, following the death of a 12 year old boy, for whom he is said to have prescribed carbolic acid for a wound due to the discharge of a blank cartridge; the boy died of tetanus, September 4. Ramashauskas is reported to have testified before the jury that he had been arrested forty-five times for violations of the pharmacy act, but had been released in each instance.

INDIANA

Society News.—The Lake County Medical Society held its annual picnic at the Woodmar Country Club near Hessville; at the banquet in the evening there was an exhibition of moving pictures selected for the occasion.

Personal.—Dr. Chester N. Frazier, Bluffton, who is on a year's leave of absence from Peking Union Medical College, Peking, China, has accepted a position for the winter at Johns Hopkins University Medical School, Baltimore, it is reported; Dr. Frazier probably will return to Peking following his leave.

Hospital News.—Sunnyside Sanatorium, Oaklandon, near Indianapolis, is constructing a medical unit, an additional infirmary building and a nurses' home, and is remodeling the present infirmary building, all of which will cost about $350,000.——The Southern Indiana Hospital, Evansville, will soon undertake the construction of a $250,000 addition.——The Delphi Hospital, Delphi, has been turned over for the use of the Improved Order of Red Men, it is reported.

Dr. Doeppers Appointed Superintendent of Hospital.—Mayor Duvall appointed Dr. William A. Doeppers superintendent of the city hospital, Indianapolis, August 30, to succeed Dr. Cleon A. Nafe, resigned. Dr. Doeppers is said to be a member of the judicial council of the Indianapolis Medical Society and was for three years the secretary; he is also treasurer of the Indiana State Medical Association, a deputy county coroner, and during the World War served overseas with Base Hospital no. 1.

Indiana University Medical Center.—The Provost of Indiana University stated in reply to an inquiry that during the ensuing eighteen months new construction and equipment at the Indiana University Medical Center in Indianapolis will include a $250,000 convalescent home contributed by the Rotary Clubs of Indiana; a $150,000 annex to the James Whitcomb Riley Hospital for Children, contributed by the Kiwanis Clubs of Indiana, and the construction and equipment of a $500,000 nurses' home and school, which sum was donated by the Ball Brothers of Muncie; the remainder of the $1,800,000 recently contributed to the hospital will be used to pay some indebtedness on the original construction and for an endowment fund; when completed, the Riley Hospital will have cost about $3,000,000. There is being constructed now the William H. Coleman Hospital for Women, which will cost $350,000; this sum was donated by William H. Coleman and wife of Indianapolis. Next season, a $150,000 addition to the University of Indiana School of Medicine will be constructed.

IOWA

University News.—The new $800,000 four story medical laboratory at the University of Iowa, Iowa City, will be completed and equipped for use in October.

Health at Des Moines.—Telegraphic reports to the U. S. Department of Commerce from sixty-five cities with a total population of about 29,000,000 for the week ending August 28 indicate that the lowest death rate (5.7) was for Des Moines, and that the death rate for the group of cities as a whole was 10.2. The death rate for Des Moines for the corresponding week last year was 8.5, and for the group of cities as a whole, 10.5.

Bulletin on Disease Prevention.—The state board of health has issued a bulletin covering the first six months of this year on disease prevention, in which it appears that heart disease, cancer, cerebral hemorrhage, pneumonia, nephritis and tuberculosis, in the order named, caused the greatest number of fatalities in Iowa. Dr. Don M. Griswold, then state health commissioner, has pointed out that a similar list made fifty years ago would reveal that the most fatal diseases then are those which are now classed as preventable. The bulletin urges that a greater effort be made in the prevention of diseases which now head the list, and suggests as a means to that end the periodic health examination of apparently healthy persons.

KENTUCKY

Personal.—Mrs. Mary Breckinridge, Lexington, won first place and a prize of $250 in the first Harmon-Survey Quarterly Award, for a paper on "An Adventure in Midwifery"; Mrs. Breckinridge is director of the Kentucky Committee for Mothers and Babies.——Dr. Garland W. Hill, Bardstown, has departed with his family for Tacoma, Wash., where he has accepted a position on the staff of the veterans' hospital.

Society News.—The Barren County Medical Society held a joint meeting with the Third District Medical Society, August 25, at Mammoth Cave; teaching clinics were conducted by Dr. John Rowan Morrison, Dr. James W. Bruce and Dr. Emmett F. Horine, all of Louisville. There were addresses, and a trip to parts of Mammoth Cave by the physicians and their families.

MICHIGAN

Hospital News.—The Battle Creek Sanitarium, Battle Creek, has concluded plans for a new eleven story structure to be erected south of the present sanatorium building.

Personal.—Dr. Horatio A. Brown won the golf championship and cup at the recent annual tournament of the Jackson County Medical Society, Jackson; hereafter a similar prize will be offered annually on this occasion.

Society News.—Dr. B. Weill-Hallé, who has been associated with Dr. Calmette in tuberculosis work in Paris, will speak in Detroit in September under the auspices of the Tuberculosis Society of Detroit and Wayne County.——The county medical societies of St. Joseph, Hillsdale and Branch held a dinner recently at the Coldwater County Club at which Dr. Robert L. Wade, president of the Branch County Medical Society, presided; Dr. Elmer L. Eggleston, Battle Creek, spoke on "Periodic Examinations of Apparently Healthy Persons."

MINNESOTA

Personal.—New fellows reported at the Mayo Foundation as of July 19 include Dr. Robert S. Steel, Sydney, Australia, Dr. Notery A. Gleason, Detroit, and Dr. Walter P. Sherrill, Temple, Texas.

Hospital News.—The Clearwater Hospital, Bagley, was recently destroyed by fire.——About 5,000 persons attended the recent opening and dedication of the new $750,000 Midway Hospital in St. Paul, which will be conducted under the auspices of the Northwestern Baptist Hospital Association; the building is in the form of a Y.

Rural Clinics for Children.—Free clinics for children up to 16 years of age were held in Red Lake County the latter part of August at Oklee, Brooks, Plummer and Red Lake Falls. The clinics were in charge of Dr. Lawrence F. Richdorf, Minneapolis; the expenses were met from funds provided by the sale of Christmas seals.

Society News.—Clinics operated under the auspices of the Hennepin County Medical Society, in conjunction with the city health department of Minneapolis up to August 17, had immunized without charge more than 1,300 persons against diphtheria and scarlet fever.——The next annual meeting of the Southern Minnesota Medical Association will be held, October 18, at Mankato.

MISSISSIPPI

Personal.—Dr. Lerhue Stevens has arrived in Clinton to take up his work as physician to the Mississippi College; Dr. Stevens was formerly on duty at the East Louisiana State Hospital at Jackson.——Dr. Solomon R. Boykin, Jackson, has been appointed superintendent of the Mississippi State Charity Hospital, Jackson, to succeed Dr. David W. Walley.

Society News.—Dr. James B. Black, Jr., Jackson, addressed the Central Medical Society, July 20, on "Pellegra," and Dr. Frank Hagaman, Jackson, on "Disabilities of the Hip Joint."——The De Soto Medical Society held a joint meeting with the Parent Teachers Association of Hernando, September 6; Dr. Lancelot L. Minor spoke on "The Necessity of Physical Examination at Stated Periods."——An organization meeting was held in Meridian, July 20, whereby the medical societies of Newton, Neshoba, Winston and Lauderdale united to form the "East Mississippi Medical Society," for which a new charter will be requested at the next state medical meeting. Dr. Matthew J. L. Hoye was elected temporary president, and Dr. Hubert L. Rush, temporary secretary-treasurer.——The president of the state medical association, Dr. Theophilus E. Ross, recently visited the meetings of the Central Medical and the North Mississippi Six Counties Medical Society.

NEBRASKA

Hospital News.—The St. Luke's Hospital, Kearney, which has been in existence fifteen years, announced that it would receive no patients after June 11, and that it would close as soon as the patients were able to leave the hospital.

Personal.—Dr. Thomas J. Lawson, Ainsworth, is a candidate for reelection to the state legislature.——Dr. Paul F.

Siman, Winside, has been appointed professor of anatomy, University of Arkansas, according to the *Nebraska State Medical Journal.*

Society News.—The Elkhorn Valley Medical Society convened at Norfolk, August 2, and spent the morning at golf; there was a business session in the afternoon, and clinics were held at the Lutheran Hospital at which were shown cases of Banti's disease, carcinoma of the bladder, and a case of brain abscess which occurred months after a mastoidectomy. At the Norfolk State Hospital, about fifteen cases were presented to illustrate the newer methods of treating dementia praecox and general paralysis; after the banquet in the evening, Dr. John Buis, Pender, read a paper on "Rupture of the Spleen with Report of Cases"; Dr. Henry Dey Myers, Howells, "Treatment of Pertussis, with Especial Reference to Vaccine"; Dr. Dexter D. King, York, "Periodic Health Examinations," and Dr. Francis A. Long, Madison, "Economic Problems of Medicine." At the business session, Dr. Ernest W. Powell, Omaha, was reelected president; Drs. John Buis, Pender, and Claude L. Wills, Madison, vice presidents, and Dr. Edward L. Brush, Norfolk, secretary-treasurer; the meeting was considered a "great success."——The Madison, Stanton, Pierce and Antelope Counties Medical Society met at Tilden, August 11; forty-eight persons were present at the dinner preceding the scientific program. Dr. John Clyde Moore, Omaha, addressed the society on "The Diarrheas of Children," and Dr. Charles R. Kennedy, Omaha, on "Urology," illustrated with lantern slides.

NEW HAMPSHIRE

Fourth Health Institute.—The fourth New England Health Institute will be held at Concord, September 27-October 1, having been postponed from May 24-28. The advances in medicine and hygiene and new methods of demonstrating the value of preventive medicine to the public will be discussed.

University News.—A $225,000 hospital is being constructed at Dartmouth Medical School, the gift of Mr. and Mrs. E. K. Hall, New York, in memory of their son; it will have a capacity of forty beds, and be connected with the Mary Hitchcock Memorial Hospital, and be known as "Dick Hall's House." The medical staffs will be the same as those for the Mary Hitchcock Memorial Hospital.——Dr. Axel M. Hjort has been appointed a professor of pharmacology on the faculty of Dartmouth Medical School. Dr. Hjort, a graduate of the University of Illinois, received his M.D. and Ph.D. degrees from Yale University, where he taught pharmacology for five years; more recently he has been engaged in research for Parke, Davis & Company.

NEW JERSEY

Hospital Orderly Prescribes.—Harold P. Palmer, Trenton, said to be a former orderly at McKinley Hospital, was held to the grand jury under bail, August 12, on a charge of practicing medicine without a license. Palmer, it is reported, wrote a prescription for Philip Padgnato.

Varieties of Health Officers.—The Department of Health of the State of New Jersey in its monthly bulletin publishes a list of the health officers in municipalities of New Jersey of more than 10,000 population. There are fifty-two names on the list, some designated as town physician, city health inspector, sanitary inspector and health inspector; sixteen of the health officers are doctors of medicine; three are veterinarians, one a registered nurse, one a Ph.D., and among the others are names of men and women who appear to have no professional degree.

NEW YORK

Outbreak of Infantile Paralysis.—The death from infantile paralysis of an 8 year old boy at Glenwood Landing occurred, August 29; nine other cases occurred within five days, it is reported, in a radius of three miles.

Dr. Baker Appointed Psychiatrist at Sing Sing.—Dr. Amos T. Baker, for the last five years medical superintendent of the New York State Reformatory for Women, Bedford Hills, has accepted an appointment as psychiatrist for the state prison at Sing Sing.

Apolonia Karpinski's License Revoked.—The state department of health announces that the license of Apolonia Karpinski of Yonkers to practice midwifery has been revoked. Mrs. Karpinski was suspended from the practice of midwifery in 1921-1922 for violation of the laws, was reinstated on recommendation of the local health department, and was recently reported by that department for using instruments at deliveries.

Personal.—Dr. Charles Davis has been appointed superintendent of the Cattaraugus County Tuberculosis Hospital, Machias.——Dr. Samuel J. Post has succeeded Dr. John P. Ruppe as superintendent of the Columbia County Tuberculosis Sanatorium, Philmont.——Dr. James C. Walsh recently assumed the duties of superintendent of the Jefferson County Sanatorium, Watertown.——Dr. Albert M. Rooker, Niagara Falls, was recently elected president of the New York Association of Superintendents and Managers of Tuberculosis Sanatoriums, and Dr. Reuben Wilson Shelley, Niagara Falls, secretary.——Dr. Sara E. Foulks, Burlington, N. J., has been temporarily appointed obstetrician for the division of maternity, infancy and child hygiene, New York State Department of Health; Dr. Foulks, for the last three years, has been director of the American Women's Hospitals work in Greece.

New York City

Hospital News.—The Brooklyn State Hospital, Brooklyn, is trying out in that institution the treatment of general paralysis and tabes by inoculation with malarial organisms; the work is under the supervision of Dr. John L. Macumber.

Automobile Licenses Revoked.—The state commissioner of motor vehicles has announced that 216 automobile licenses in New York City had been suspended the first ten days of August and thirty-six had been revoked, the majority of them being for driving cars while intoxicated. The New York *Times* publishes the names and addresses of those persons whose licenses were revoked for driving while intoxicated.

Epidemic Among Fowls.—Thousands of chickens shipped from some Western states to New York have been ordered killed by the city health commissioner on account of an outbreak of diphtheritic roup, it is reported; other steps will be taken to prevent all diseased poultry from reaching the public. A board of veterinarians and laymen appointed to make an investigation is said to have found in one car 600 dead chickens, in another 313, in another 75 and in another 100, and in addition hundreds of chickens that were sick with this disease.

Milk "Czar" to Be Appointed.—Following a conference of the health commissioner and officers of the Milk Chamber of Commerce, September 8, the latter decided, it is reported, to appoint a supreme arbiter in the milk industry whose work will be similar to that of the so-called czars in baseball and the moving picture industry. The Milk Chamber of Commerce, which is an organization of independent milk dealers in New York, has shown its desire to clear up the milk situation, and has ordered the discharge of all men previously associated with Harry Danziger, the first man to be indicted in the milk graft inquiry.

Temperature in Pasteurization of Milk.—In 1914, the pasteurization of milk in New York except that termed "certified," was made obligatory by law. A decline in the nonpulmonary tuberculosis death rates has occurred since this law became effective. The bulletin of the city health department states that in 1911 there were 1,460 deaths from nonpulmonary tuberculosis, and in 1925 only 699. Previous to the pasteurization of milk, more than 50 per cent of the tuberculous glands of the neck investigated were due to the bovine bacillus; since pasteurization became general, only in six out of fifty specimens obtained has the bovine bacillus been found, and five of these patients were from out of town and had been fed on raw milk. The health authorities are considering the subject of pasteurization in view of the recent action of the Conference of State and Provincial Health Authorities of North America, which agreed on a temperature of 145 F. maintained for thirty minutes. The requirement in New York is 142 F., and the commercial interests are protesting against a higher standard, which, they say, will require the installation of new equipment and increase the cost of milk. The health commissioner will make a decision after consideration of opposing views and conferences with persons qualified to give counsel.

NORTH CAROLINA

Personal.—Dr. James R. Alexander, Charlotte, has been elected president of the North Carolina Hospital Association.

Hospital News.—The county commissioners of Forsythe County have purchased a 48 acre tract about 2 miles from Winston-Salem; measures will be taken to erect there a county tuberculosis hospital.

Dr. Wright Appointed to State Board of Health.—The governor has appointed Dr. John B. Wright, Raleigh, a member of the state board of health to succeed the late Dr. Richard H. Lewis; Dr. Wright who was the partner of Dr. Lewis for many years, held the first "throat clinic" conducted under the auspices of the state boards of health and education.

Warning—Riding on Rear of Automobiles.—The state board of health has issued a warning about the danger of being overcome by gases while riding on the rear of automobiles. A recent nearly fatal accident of this kind occurred to a young boy who was overcome while riding on the rear of a truck. The car in moving is said to produce a "vacuum" into which is drawn the exhaust gases, among which is carbon monoxide. The state board says that the exhaust on U. S. Army ambulances has been changed from the rear to the side of the ambulance for this reason.

NORTH DAKOTA

Reappointments to State Board.—Drs. Henry M. Waldren, Drayton, Henry H. Healy, Grand Forks, and Murdock MacGregor, Fargo, were reappointed by the governor, August 21, as members of the state medical board for three years.

OHIO

Society News.—Eighty-six physicians took the second postgraduate course of the Academy of Medicine of Toledo and Lucas County; Prof. Frank N. Wilson, professor of internal medicine, the University of Michigan Medical School, Ann Arbor, conducted a series of lectures on the heart.

Promotions and Appointments at Western Reserve University.—The following promotions and appointments to the faculty of Western Reserve University Medical School have been announced in the *Bulletin* of the Academy of Medicine of Cleveland:

PROMOTIONS

Dr. Roy W. Scott, associate professor of medicine for five years.
Dr. Marion A. Blankenhorn, associate professor of medicine for five years.
Dr. William B. Chamberlain, associate clinical professor of otolaryngology for five years.
George B. Ray, Ph.D., assistant professor of physiology for three years.
Dr. David Rapport, assistant professor of physiology for three years.
Dr. Maxwell Harvin, assistant professor of orthopedic surgery for three years.
Dr. Otto Saphir, senior instructor in pathology for three years.
Dr. James D. Pilcher, senior instructor in pediatrics for two years.
Dr. Abram B. Bruner, senior clinical instructor in ophthalmology for two years.
S. W. Chase, Ph.D., assistant professor of histology and embryology for three years.
Dr. Carl Krenz, instructor in pathology for two years.
Dr. John A. S. Gammel, instructor in dermatology and syphilology for two years.
Dr. John Rauschkolb, instructor in dermatology and syphilology for two years.
Dr. Norman C. Wetzel, instructor in pediatrics for two years.
Dr. Arthur C. J. Brickel, clinical instructor in anatomy for two years.
Dr. Herbert L. Koeckert, instructor in clinical pathology for two years.
D. Spencer A. Wahl, clinical instructor in pediatrics for two years.
Dr. Joseph E. McClelland, clinical instructor in pediatrics for two years.
Dr. Edwin P. Kennedy, clinical instructor in obstetrics for two years.
Dr. James L. Reycraft, clinical instructor in gynecology for two years.

APPOINTMENTS

Dr. John H. Davis, clinical instructor in pediatrics for two years.
Dr. Clyde L. Cummer, demonstrator in dermatology and syphilology for one year.
Dr. Robert B. Hauver, demonstrator of pediatrics for one year.
Dr. Julius W. McCall, demonstrator of otolaryngology for one year.
Dr. Clarence H. Heyman, demonstrator of orthopedic surgery for one year.
Dr. Robert S. Young, demonstrator of genito-urinary surgery for one year.
Benjamin Freeman, Ph.D., instructor in biochemistry for one year.
Dr. John W. Holloway, Crile Fellow in surgery for one year.
Dr. David M. Cox, demonstrator of gynecology for one year.
Dr. Alwyn E. Bennett, demonstrator of obstetrics for one year.
Dr. William C. McCally, demonstrator of histology and embryology for one year.
Dr. Herbert S. Reichle, fellow in pediatrics for one year.
Dr. Joyce I. Hartman, fellow in pediatrics for one year.
Dr. Hope Sherman, fellow in pediatrics for one year.

OKLAHOMA

Personal.—Dr. Alexander H. Stewart has been appointed city health officer of Lawton, to succeed Dr. Charlie P. Hues, resigned.——Dr. Ernest E. Nunnery, Miami, is now on duty at the U. S. Bureau of Mines clinic at Picher.

Society News.—The Oklahoma State Medical Association, at its recent annual meeting in Oklahoma City, appointed a committee on "contract and industrial practice" for the purpose of research and study of all features of the subject, to make a complete report at the next annual meeting.

RHODE ISLAND

Death Rate in 1925.—The death rate in Rhode Island in 1925, according to the U. S. Department of Commerce, was 12.11 per thousand of population, as compared with 12.48 in 1924. The principal decreases in death rates were from scarlet fever, suicide, and diseases of the intestinal tract.

SOUTH DAKOTA

Society News.—Mrs. Robert L. Murdy, Aberdeen, was elected president of the Women's Auxiliary of the state medical association at the annual meeting in May.

Personal.—Dr. Thomas F. Ballard, director, Yankton County Health Department, has become city health officer of Aberdeen.——Dr. Benjamin W. Black, formerly with the Veterans' Bureau at Salt Lake City, has been appointed medical director of the Veterans' Bureau at Sioux Falls.

State Society Recommends Course in Hygiene.—At its last annual meeting, the South Dakota Medical Association adopted resolutions to be presented to the state board of regents, requesting them to add a definite and uniform course in health and hygiene to the curriculums of all teacher training schools of the state which do not now have such a course.

TENNESSEE

Typhoid Outbreak.—The city health officer, Nashville, is reported as stating, August 28, that the typhoid epidemic showed no signs of abatement, and that the total number of cases in that city this year was 103, and the deaths from typhoid fifteen.

Society News.—Dr. John A. McCulloch, Maryville, was host at a melon feast to the Blount County Medical Society, at his home, August 19; plans were made for the meeting of the East Tennessee Medical Association, Maryville, October 12 and 13, which the Blount County society will entertain; Dr. Granville D. Lequire then addressed the society on "Mercury, Its Uses and Abuses."

TEXAS

Personal.—Dr. Richard McCormick, Waco, has been reappointed county health officer for two years.——Dr. Alfred L. Ridings has been appointed city health officer of Sherman to succeed the late Dr. James A. Swafford.——Dr. Herschel F. Connally has been elected mayor of Waco.

VERMONT

Increase in Mortality.—The death rate for Vermont in the year 1925, according to the U. S. Department of Commerce, was 14.58 per thousand of population, as compared with 13.79 in 1924. The increase is accounted for largely by increased death rates for heart disease, influenza, nephritis and cancer. The death rates in 1925 in Vermont from tuberculosis, pneumonia and whooping cough decreased; there were no deaths reported from measles.

Experiment in Reducing Cost of Nursing.—The trustees of the trust established under the will of Thomas Thompson of New York are making an experiment, it is reported, whereby people of moderate means in the vicinity of Brattleboro may receive nursing at home at half the regular price. It is planned to obtain 500 members among whom each single person will pay $2, each married couple $3, and each child 50 cents to the association and thereby be entitled to graduate nurses during illness at home, or to mutual aid association nurses at half the usual charge.

VIRGINIA

Society News.—The Tri-County Medical Society—Warren, Rappahannock and Page—met at Front Royal, August 17, under the presidency of Dr. Lyle F. Hansbrough. The program was devoted to a discussion of typhoid fever by Dr. Ernest L. Grubbs, Front Royal; Dr. David M. Kipps, Front Royal; Dr. Edgar R. Browning, Flint Hill, and Dr. Philip W. Boyd, Winchester.

Hospital News.—The Winchester Memorial Hospital, Winchester, is constructing an addition which will make the total capacity of the institution 109 beds; it will be completed about Jan. 1, 1927.——The new Pulaski Hospital, Pulaski, was formally opened, recently.——The Hughes Memorial Hospital, Danville, was recently opened to the public; it has a capacity of 100 beds.——The Rockingham Hospital, Harrisonburg, is to construct a new addition.

Distribution of Silver Nitrate by the State.—The state bureau of vital statistics has issued a warning concerning the use of solutions of silver nitrate in new-born babies' eyes. The bureau is entrusted by the state with the free distribution of a 1 per cent solution in wax ampules, and since this law was enacted in 1918, a very small number of cases of ophthalmia neonatorum has been reported; it is admitted, however, that complete reports are not available. Attention is called to an instance in which a silver nitrate solution, prepared by a druggist, on examination was found to be a 10 per cent solution instead of a 1 per cent solution; it resulted in a severe case of conjunctivitis, with corneal ulcer. Physicians and midwives are requested to report cases of ophthalmia neonatorum to the state board of health and to use the solution distributed by the bureau of vital statistics, for which the state is responsible.

WYOMING

Personal.—Dr. Wilber K. Mylar, Cheyenne, has filed his petition as candidate for secretary of state.

Decrease in Mortality.—The death rate in Wyoming in 1925, the Department of Commerce states, was 8.27 per thousand of population, as compared with 9.51 in the previous year. Among the decreased rates last year was that for measles, which caused no deaths in the state, but which in 1924 caused a mortality rate of 0.19 per thousand of population.

GENERAL

Hair Tonics and Dyes.—In a report issued August 29, the U. S. Department of Commerce placed the value of hair tonics produced in 1925 in this country at $9,480,000, and the value of hair dyes produced at $1,616,000.

Synthetic Camphor.—There was developed during the World War a method whereby camphor could be obtained from turpentine; trial shipments of this camphor reached the United States after the war. The U. S. vice consul at Berlin reports now that the monthly shipments of this product from Germany to the United States increased from $78,000 in January of this year to $286,000 in April; only American turpentine is used in its manufacture, the turpentine from Poland and Russia not proving satisfactory. So far its use has been limited to the larger users, such as the manufacturers of pyroxylin plastics.

Society News.—At the annual convention of the American Dietetic Association, Atlantic City, N. J., October 11-13, Dr. John J. R. Mcleod, of the University of Toronto, and Julius Stieglitz, Ph.D., professor of chemistry, University of Chicago, among others, will speak; among the subjects for discussion will be advancement in the basic sciences; our present knowledge of rickets; teeth and diet; temperament problems in relation to food, and diabetes in children.——Dr. Florestin Aguila, Madrid, Spain, was elected president of the International Dental Federation at the seventh congress in Philadelphia in August; Drs. William Guy, Edinburgh, Maurice Roy, Paris, Herbert L. Wheeler, New York, F. S. Stuckert, Frankfort-on-the-Main, and William H. G. Logan, Chicago, vice presidents; Dr. George Villain, Paris, secretary-general, and Dr. A. J. Van Hasselt, the Hague, treasurer.

Influenza Epidemics. — The U. S. Public Health Service considers that the outbreak of influenza in the winter and spring of 1926 would have been regarded as a calamity were it not for the pandemic of 1918, which caused more than 500,000 deaths in the United States, and the epidemic of 1920, which caused about 100,000 deaths in this country. The three epidemics were similar in some epidemiologic respects. It is too early for accurate figures on the 1926 outbreak, but the annual death rate in large cities of the United States from December 27 to May 28 for all causes rose to 19.4 per thousand in the week of March 21-27, which was 31 per cent higher than the rate for the corresponding week of 1925. The three epidemics spread over the entire country in comparatively short periods of about the same length and within that period they were generally similar with respect to their course from the point of view of time. The incidence of 1926 influenza cases was similar to that of 1918 in the age period 5-9, but was higher in the ages 35 years and over.

American Academy of Ophthalmology and Otolaryngology.—The thirty-first annual meeting of this society will be held at Antlers Hotel, Colorado Springs, Colo., September 13-18, under the presidency of Dr. Edward C. Ellett, Memphis, Tenn. Tuesday afternoon and Thursday morning will be devoted to ophthalmology; Wednesday afternoon and Thursday afternoon to otolaryngology; a golf tourament has been arranged for Monday; afternoon sessions will close at 4:30. There will be an informal dance Tuesday evening following the business session, and the annual banquet Wednesday evening at the Broadmoor Hotel. Examinations by the boards will be Monday morning at the University of Colorado Medical School in Denver and applicants should communicate with the secretary of the board before which they expect to appear; Dr. William H. Wilder, 122 South Michigan Boulevard, Chicago, is secretary of the American Board for Ophthalmic Examinations, and Dr. Hanau W. Loeb, 1402 South Grand Boulevard, St. Louis, secretary of the American Board of Otolaryngology. A special scientific session Monday evening will be addressed by Prof. Robert H. Gault, Ph.D., Washington, D. C., whose subject will be "Hearing Through the Skin," illustrated by lantern slides. The guest of honor will be Mr. Basil Graves, London, England, who will address a joint session, Wednesday morning, on "Some Suggestions Concerning Cataract Extraction"; Dr. Gerald B. Webb, Colorado Springs, has also been invited to address this session on "Serum Diagnosis and Specific Treatment of Tuberculosis."

Bequests and Donations.—The following bequests and donations have been announced recently:

The Mercer Hospital and the St. Francis Hospital, each $15,000, and the McKinley Hospital, $10,000, all of Trenton, N. J., by the will of the late Col. Washington A. Roebling, builder of the Brooklyn Bridge.

The Lowell General Hospital, Lowell, Mass., more than $700,000 from the estate of the late Freeman B. Shedd of Lowell.

The Lewistown Hospital, Lewistown, Pa., $5,000 by the will of the late Mary Turner McCullough.

The German Society of Pennsylvania, $5,000 for a free bed in the Lankenau Hospital, Philadelphia.

The Maine General Hospital, $50,000 to be known as the Stanley T. Pullen Fund, and the Maine Institute for the Blind, $2,000 by the will of the late Mrs. Elizabeth Pullen.

The Oregon State Tuberculosis Hospital, Salem, $5,000, by the will of the late Chester D. Edwards, Eugene.

The Children's Aid Society, $10,000 and St. Luke's Hospital, New York, $5,000 by the will of Martha W. Low.

The Pennsylvania Hospital and the Shriners Hospital for Crippled Children, Philadelphia, $200 each, by the will of the late Joseph Rosenfeldt.

The Lucien Moss Home for Incurables, Philadelphia, $200, by the will of the late Mollie Belletz.

The New York Skin and Cancer Hospital, Lebanon Hospital, Lennox Hill Hospital, the Montefiore Home Sanatorium for Consumptives, New York Association for the Blind, all of New York, and the Jewish Hospital Association of Cincinnati, each $1,000, by the will of Ida Seasongood.

The Home for Crippled Children, the Home and Hospital for Incurables, the Newark Orphan Asylum, all of Newark, N. J., each $2,000 by the will of Walter M. Ward, Newark.

The Biloxi City Hospital Association, Biloxi, Miss., about $4,300 by the Biloxi Lodge of Elks.

The Caledonian Hospital of the City of New York, will receive about $85,000 from the estate of John A. Kerr on the death of his wife, Fernande Kerr.

The Misericordia Hospital, Philadelphia, $1,000, by the will of John E. Whalen.

The Sacred Heart Hospital, Eau Claire, Wis., a donation of $100,000 for the erection of an addition to be known as the Mary E. Dulaney Memorial.

The University of Chicago, for the purpose of founding a publication in the field of social science, $30,000 from the estate of the late Prof. Albion W. Small.

CANADA

Hospital News.—A prominent business man of Montreal, who, the *Canadian Medical Association Journal* says, wishes to remain anonymous, has given an endowment of $250,000 to the Shriners' Hospital for Crippled Children, Montreal. ——A general dispensary will be established in Verdun, for which twenty-two physicians have volunteered their services; Dr. Richard M. H. Power will be in charge.

Society News.—Dr. David W. Archibald, Sydney Mines, has been elected president of the Cape Breton Branch Medical Society of Nova Scotia, and Dr. William Grant, Wolfville, president of the Valley Branch Medical Society of Nova Scotia.——Dr. Alfred Howard Spohn, Vancouver, has been elected president of the Canada Society for the Study of Diseases of Children; Dr. Henry P. Wright, Montreal, vice president, and Dr. Frederick F. Tisdall, Toronto, secretary-treasurer. The next annual meeting will be at Winnipeg.——At the annual meeting of the Fraser Valley Medical Society, Dr. George W. Sinclair, New Westminster, was elected president, and Dr. Omar Van Etter, secretary-treasurer; Dr. James Miller, professor of pathology, Queens University Faculty of Medicine, addressed the society on "Cancer Research."

LATIN AMERICA

Personal.—Madam Curie sailed from Rio de Janeiro for her home in France, August 30, after a series of lectures in various cities of Argentina.

New Sanatorium in Mexico.—The Vera Cruz Antituberculosis League recently opened a small sanatorium for tuberculosis patients; the league is conducting also a dispensary, and a campaign of education by lectures given in patios of tenement houses. The governor of the state assists by appropriating 250 *pesos* a month for this work.

Prize for Research on Action of Cactus Juice.—The *Revista Mexicana de Biologia* announces that the medical faculty of the University of Mexico City offers a prize for the best work received before April, 1927, dealing with the pharmacology of the mescal and other forms of cactus, of the peyote type. Competition is restricted to Mexican physicians or physicians that have resided in Mexico for three years.

Maternity Center in Chile.—In accordance with the terms of a bequest by the late Señor Victor Pretot Freire, there has been opened a well equipped health center for mothers in Santiago, which will work in cooperation with the Patronato and the school of social service. Advice will be given to expectant mothers, and care during and after childbirth. Midwives will be sent to the home in normal cases of labor; difficult cases will be taken tò a hospital.

Costa Rica Items.—The death rate at San Jose in 1925 was 22.1 per thousand and the birth rate, 44.1 per thousand.——The Punta Arenas Hospital will soon open two new buildings, one for contagious diseases, the other for administrative offices.——A Better Baby Show was recently conducted in San Jose; prizes were offered for the healthiest child in each of three age groups from three months to five years.——The board of health of San Jose has decided to establish an institute of child welfare to conduct demonstrations and lectures in the care of children and to gather statistics on child welfare.

FOREIGN

Centenary of Brehmer.—It is just a hundred years since the birth of Hermann Brehmer, whose graduation thesis proclaimed the idea, "Pulmonary Tuberculosis is Curable"; his sanatorium at Görbersdorf was the pioneer and long the model for the world.

Plague Follows Earthquake.—Four cases of bubonic plague and two deaths were reported at Horta in the Azores, September 3, following the earthquake of the previous week. The general sanitary situation, however, was considered satisfactory. According to the press report, the governor of the island is a physician.

Adenoid Institute at Rome.—The *Policlinico* states that the authorities are organizing an institute to be exclusively devoted to removal of adenoids and postoperative treatment. There will be provisions for fifty beds, and arrangements for collective or individual postoperative inhalation treatment, utilizing a spray of calcium solution or the Salsomaggiore mineral waters, or other measures as indicated.

Medical Journal in Esperanto.—The *Internacia Medicina Revuo*, the editor-in-chief of which is Prof. J. Vanverts of Lille, is said to be now appearing regularly, with collaborators and subscribers in all parts of the world. Besides discussions of international scope, it publishes abstracts and reviews of medical literature. Sample copies will be sent on request by Dr. Briquet, rue de la Bassée, 31, Lille, France.

Prize for Research in Ophthalmology.—The *Riforma medica* states that the R. Clinica Oculistica, Rome, is the headquarters of the Italian Ophthalmologic Society, to which articles are to be sent in competition for the international Cirincione prize. A gold medal and 20,000 liras are offered for the best original work composed in 1926 on the eye and its diseases. All persons over the age of 45 are excluded from competition, as also all regular professors. Of the six other prizes offered by the society, two will be awarded for the best works on trachoma and histology or embryology presented at the 1926 specialist congress.

British Optical Convention.—The optical convention held recently at the Imperial College of Science, London, was the third of the kind; the previous meetings were in 1905 and 1912. The convention was opened by the prime minister, Mr. Stanley Baldwin. In his presidential address, the astronomer royal of Great Britain, Sir Frank Dyson, reviewed the progress of optical manufacture, and remarked on the contribution of astronomers to the art of optical design. The ophthalmic section of the convention, in which alone there were more than thirty exhibits, was visited by more than 8,000 persons. About 100 technical papers were read at the meeting by leading British authorities in various branches of optics. The proceedings of the convention are available for 30 shillings and 9 pence, including postage; they contain verbatim reports of the papers and discussions. Thomas Martin, 1 Lowther Gardens, Exhibition Road, London, S. W. 7, is the secretary.

Personal.—The *Bruxelles médical* mentions that the queen of Belgium recently officiated as godmother to the seventh daughter of Dr. G. Debaisieux, professor of surgery at Louvain.——Dr. H. Matagne, Brussels, was recently awarded the gold medal of the Carnegie Hero Fund.——Dr. E. Alfieri, professor of gynecology at the University of Pavia, has been instrumental in the organization of a consulting dispensary at Milan, for advice to those contemplating matrimony.——Prof. J. E. Johansson presided at the recent International Physiology Congress at Stockholm in August, at which 600 registered. The opening address was by Prof. Gowland Hopkins on "The Mechanisms of Biologic Oxidation."——Dr. Karl Henschen, professor of surgery at the University of Zurich, has been appointed successor to the late Prof. G. Hotz, at the University of Basel.——Dr. A. del Campo, of the editorial staff of the *Revista Médica* of Malaga, has been awarded a Rockefeller fellowship for study of epidemiology and left in August for New York.

Deaths in Other Countries

John G. Adami, vice chancellor of Liverpool University, former professor of pathology and bacteriology, McGill University Faculty of Medicine, Montreal, co-author of a "Textbook of Pathology" and "Principles of Pathology," and other books, August 29, aged 64.

Government Services

New Officers in Charge of Marine Hospitals

The U. S. Public Health Service has issued orders directing the following officers to assume charge of the U. S. marine hospital indicated:

Surg. John W. Trask, U. S. M. H. no. 1, Baltimore.
Surg. John T. Burkhalter, U. S. M. H. no. 3, Buffalo.
Surg. Milton H. Foster, U. S. M. H. no. 5, Chicago.
Sr. Surg. Gregorio M. Guiteras, U. S. M. H. no. 10, Key West, Fla.

Medical Personnel for Army of Strength Proposed

In a statement as to the needs of the medical department, the Surgeon General is reported to have said, that for an army of the strength proposed there should be 1,485 medical officers, 297 dental officers, 284 of the veterinary corps, 128 of the medical administrative corps, 10,000 enlisted men, and 700 in the nurse corps. The Surgeon General pointed out, according to the *Military Surgeon*, that the medical department, from the point of view of preparedness for field service, is infinitely worse off now than it was during the prewar period, comparing the demands then made on its personnel with what they are today. The Surgeon General recommended, with regard to the project, an increase of three brigadier generals in the medical department, one each for the medical corps, veterinary corps, and dental corps. For the branches of the service having a single list with respect to promotion, there is one general officer for every 127 officers, while in the medical department, which now has three general officers, with the insufficient increase proposed the ratio would be one general officer to every 554 officers; if the medical department were allowed three additional brigadier generals, the ratio would then be one general officer to every 276 officers of the medical department, a marked contrast to the ratio of 1 to 127, which applies to line and other officers on the single list. The Surgeon General considers that, in promoting the health of the military establishment, the medical department is directly conserving the federal budget, and that it returns to the government a magnificent yield on money spent in its work; he recommends with regard to the enlisted personnel of the medical department, that the same principle of equal opportunity and promotion be established, and that the present disproportion between this department and other technical branches of the army be corrected, so that it may be as attractive to prospective members of the department, as are the ordnance, the finance and the quartermaster departments.

Veterans' Bureau Personals

The U. S. Veterans' Bureau Medical Bulletin notes the resignations of Drs. Frank G. Grace, William P. Katz, Maxim Pollak, Samuel J. Post, William G. Raby and Robert S. Wishard.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 21, 1926.

British Association for the Advancement of Science

THE EVOLUTION OF MODERN MAN

Prof. H. J. Fleure, president of the Anthropology Section, chose for his address "The Regional Balance of Racial Evolution." Modern man, he said, was known first from the northwest quadrant of the Old World, and chiefly from Europe. Several subgroups of modern man in Europe were now recognized as early as the Aurignacian period, implying that modern men had somewhere gone through a long history before they came to Europe with Aurignacian culture. They were not by the evidence forced to assume development from widely different types of ancient man nor were they forced to assume a single ancestral pair or even a small number of ancestral pairs. Considerations of the effect of climate on body and mind suggested that man must have evolved in a region not very different in climate from the existing climate of Europe, but it was possible, according to Olbricht, that as his mental processes were most active at a temperature below that of the greatest comfort physically, the advance to the fully human condition might have been made in one of the later phases of the ice age. If modern men were descendants of one ancestral group, it was probably a group of Pleistocene or mid-Pleistocene date, when the requisite climatic conditions obtained in the belt now forming the Sahara and southwestern Asia. The ancestors of modern men might perhaps be placed in the zone from the Saharan edge of the Atlantic to Persia, not all alike, and with the most active mentally on the northern and colder side of this zone. An advance toward the erect posture was probably characteristic of early modern man, and he was probably more or less brown skinned, dark haired, and dark eyed, living where there was a good deal of summer sunshine. Reduction of jaws and brow bridges from what characterized earlier types could be postulated, making it easier to balance the head on the vertebral column. This reduction was made possible by increased use of the hands. The growing forebrain was capturing energy, and there was probably a reduction of the pituitary secretions and an increase of thyroid secretion, or at least a liberation of it from old duties to new. The variation of characters in early examples of modern man suggested a number of ancestors spread over a fairly large zone. There [illegible] proportions of the upper

A vegetarian diet was more economical of the resources of the soil; meat and all animal products, such as milk and eggs, were produced with an expenditure of energy that might be from seven to twenty times as high as the energy available from them. If the maximum of population supported by a given area of land was to be the objective, vegetarianism and a cessation from the use of alcohol would become necessary. But he could not help feeling that the race (not individuals) which cut out meat and alcohol to multiply would be of the permanent slave type, destined to function like worker bees in the ultimate community. With regard to the intensification of production, the dominating factor was the cost of labor; in the past, the cheaper way had been extending the cultivated area. A certain gain might be achieved by introducing more heavily cropping varieties, but too much was not to be expected from the plant breeder. The present annual increment in the white population was about 5 millions, which would necessitate taking into cultivation 12 million acres of new land every year. No process of that kind was going on; indeed, in many crops the acreage was decreasing, and economic conditions in almost every European county were reducing the numbers of agricultural laborers. To continue to feed the growing population of the world on the present methods, a continued expansion of the cultivated area is required; new land is called for year after year. Land of the necessary quality cannot be found in quantities commensurate with the immediate demand. Doubtless the white races will maintain their rising standard of living and will apply deliberate checks to their fertility—a process already in action. But the restriction of increase will not take effect all at once, even under economic pressure, and the danger lies in the period preceding the comparative stabilization. As it cannot be supposed that the development of the civilized races can be allowed permanently to be checked by lack of food when food is obtainable, it follows that resort must be had to the intensification of production from the area already under cultivation.

HEREDITY

"Heredity in its Physical and Mental Aspects" was the title of a joint discussion by the Zoology, Anthropology and Psychology sections. Dr. C. S. Myers said that heredity had been viewed from two standpoints—the physical and the psychologic. According to the former, definite units of "behavior" existed, and these were separately localizable in different structures within germ cells, much as various mental functions were commonly supposed to be localizable in different regions of the cerebral hemispheres. Adoption of the psychologic standpoint, on the other hand, had resulted in [illegible] and otherwise unsatisfactory analogies being drawn [illegible] valuable merely a similar implication. At all events, what was obviously inherited seemed something more akin to mind than to matter; the functioning of the whole and the interrelation between parts, general orderliness and direction seemed at least as important as a narrow material localization. It was in the persistence of those rather than in its identical substance that the "immortality" of the germ plasm consisted. Here entered the difference of attitude between the physicist and the psychologist. The physicist was generally content with analysis of a complex body into elementary ones. The psychologist more frequently observed that identical elements—e. g., the notes of a melody—might be differently combined to yield quite a different melody, and that the same melody might nevertheless be evoked from a set of quite different notes by transferring it into another key. But the psychologist went beyond the conclusion that the properties of the whole depended on the kind of combination of the parts; he insisted that in the living organism the parts themselves are altered by separation from the whole, and that within it they depend on interrelation between parts of the system to which they belong, and even more generally on the configuration of systems of wider and wider complexity. Thus formal, as well as material, bases of heredity must be (as indeed they were being) taken into consideration. During the development, and indeed throughout the life of the individual, well marked changes might occur in its personality or in one or more of the mental qualities that went to compose it. Sometimes the character of the individual suddenly underwent a complete change, as in cases of multiple personality. Those phenomena, when considered from the standpoint of heredity, suggested that the individual actually inherited a vast number of mutually antagonistic characters, and that their actual appearance in the course of the life of the individual depended on what had been variously termed above internal configuration, constellation, and on such external influences as education and environment.

ANIMAL DYNASTIES IN MONGOLIA

In the Section of Zoology, Prof. H. F. Osborn lectured on the work of the American Museum Expeditions to the Gobi Desert. He said that the twin sciences of geology and paleontology had reached a degree of precision which enabled them, after the relatively brief and intensive surveys of the past four years, to declare "the order of the strata of Mongolia." Included in the Gobi Desert was a stratum equivalent in age to the Oxford clay containing the giant sauropod asiattosauros, a first cousin of William Smith's cetisaurus of Oxford. Physicists had extended the life history of the earth from the momentary 5,000 years of Ussher to the 1,000,000,000 years of Rutherford. That allowed a comfortable margin of 400,000,000 years' time for the wonderful procession of advance recorded in the twenty-seven chapters of Mongolian prehistory, beginning with Purbeck and Oxford Upper Jurassic time and ending practically with the dominance of Genghis Khan, and followed by the decline of Mongolia to its present desert and relatively uninhabited state. In the meantime, this new arid "roof of the world" had been the scene of a whole succession of animal dynasties, fertile, productive, with a relatively temperate and invigorating climate, the homeland of waves of migrating land reptiles and mammals, which successively spread into every other continent. It was singular that this greatest of all life centers of prehistory was the last to be discovered, following by a half to three fourths of a century the discoveries of the great life centers in Australia, in North and South America, in northern Africa and in southern Asia. Although each of these great centers contributed its quota to the prehistory of the earth, none played a part at all comparable to that of central Asia. Osborn described the discovery of the Upper Jurassic of Gobi and the five successive terrestrial life zones of the Age of Reptiles. Following this were the successive life phases of the Age of Mammals, from the small archaic mammals of the Tung Kurch of the eastern Altai Mountains. Then, in 1925, were discovered four periods of the Old Stone Age of man, provisionally referred to the Eolithic, the Acheulean, the Azilian and the Campignian. Osborn's theory was that the high plateau region of Asia, rather than the traditional lowlands of southern and western Asia, was the home of the vigorous line of ancestors of the Dawn Man of the Age of Mammals.

THE HAIRLESSNESS OF MANKIND

In the Anthropological Section, Dr. Fleure in his presidential address said that the human prenatal period was approximately two months longer than that of the great apes. At seven months, the birth time of these apes, the human embryo was thickly clad with down, which disappeared before birth. The suggestion was that the hairlessness of mankind was a secondary result of the longer prenatal period required for the growth of the brain. The production of hair absorbed a large quantity of energy and was closely associated with the thyroid secretion. The reduction of hair growth set free energy and the thyroid secretion to more useful purposes, such as the development of the brain.

Dr. R. T. Gunther made a very different suggestion—that man was still hairy when he discovered the use of fire. A hair clad person clumsily dealing with the new element of fire would be liable to serious accidents, so that hairiness would become a disadvantage and might have been eliminated by natural selection, aided afterward by sexual selection.

Miss M. E. B. Russell dealt with another aspect of the problem. She had plotted the types of hair form shown by the different races and subraces of living men against the different kinds of environment. She found a high degree of correlation and drew the conclusion that hair form and probably other human characteristics were the result of prolonged exposure to a particular kind of environment acting through inheritance.

THE AMERICAN DOMESTIC ATMOSPHERE

In the Section of Physiology, Dr. Vernon said that experiments had shown that Americans are permanently acclimatized to a temperature 6 degrees warmer than ours. The American finds himself most comfortable in a temperature of 70 F., and the Englishman in one of 64. This he attributed to the greater use of central heating systems in the houses of the United States.

The Results of Operation for Cancer of the Breast

Important reports on the natural duration of cancer and the late results of operation for cancer of the breast have been issued by the ministry of health. The first, contributed by Dr. Greenwood, one of the medical officers of the ministry, emphasizes the advantage of early operation for cancer of the breast. In an introductory note, Sir George Newman remarks that, since the report was prepared the departmental committee on cancer (of which he is chairman) has had the advantage of consulting excellent records of cases of women operated on for undoubted cancer of the breast in various provincial cities. The results confirm Dr. Greenwood's arresting conjecture that resort to early operation in cancer of the breast would, in the aggregate, add thousands of years to the active life of the nation. Dr. Greenwood states that the normal expectation of life of a woman aged 55 is 18.87 years. The expectation of life of a woman with untreated cancer of a breast is 3.25 years; the expectation of life of a woman operated on under "average" conditions is 5.74 years, and of a woman operated on under the best conditions it is 12.93 years. By "average" conditions are meant those in which women tuberculosis vaccination is to be done. Three doses of B. C. G. vaccine are to be given by mouth every second day, otherwise on the third, fifth and seventh day of life. The contents of one ampule are mixed in a spoon with a little milk and given to the infant thirty minutes before nursing. The ingestion of the vaccine produces no disturbance, digestive or otherwise, and seems to be perfectly inoffensive. Tests have been carried on during the last five years in France on 5,183 infants, in Belgium on 117, in Indo-China on 3,352 and in Senegal on 218, a total of 88 per cent infants belonging to tuberculous families. Had these nurslings remained unvaccinated, 25 per cent, or 2,217 infants, would have died during the first year of life, but thanks to vaccination that mortality has dropped to 1.8 per cent, or 169 infants; therefore 2,048 babies have been saved from contracting the mother's tuberculosis.

Audeoud thinks that sufficient proof of the value of this treatment has been offered and hopes that the day is not distant when all the new-born will be submitted to preventive antituberculous vaccination just as done in the case of smallpox. Audeoud also says that it is highly desirable at present to immunize with the B. C. G. vaccine all new-born infants exposed to familial contagion and especially those born of tuberculous parents. The vaccine is sent gratuitously to physicians in any country, but the number of babies and the date of their treatment must be specifically given as the vaccine must be freshly prepared, so that no stock vaccine can be kept on hand.

Limitations of Roentgen Ray in Diagnosis of Tuberculosis

At a recent meeting of the Geneva Medical Society, Dr. Guillermin referred to some mistakes in diagnosis resulting from roentgen-ray examination in cases of suspected pulmonary tuberculosis. In pulmonary cysts or neoplasms, interlobar pleurisy and pneumothorax, the roentgen ray gives information of the greatest importance. In tuberculosis, roentgen-ray examination will reveal the signs of induration, cavities, adhesions and functional disturbances present in certain regions of the lungs. All these data are useful, but they must be properly interpreted. Injections of iodized oil are contraindicated in tuberculosis.

Guillermin, after reporting five cases in which mistakes had been committed, pointed out that the prognosis of tuberculosis did not depend on the extent of the lesions or their degree. Everything depended on the resistance of the organism to the tuberculous infection. Old lesions, with or without cavities, are curable if a good general state of health is maintained. Clinically, recent lesions with very marked roentgen-ray images have a good prognosis if the general health is good, but the inverse is true, especially if the roentgen-ray examination is negative. City children, when they have resisted a first tuberculous infection, develop a resistance superior to that of country children. Of course, many other factors are to be taken into account, especially complications, such as laryngitis and enteritis. On the other hand, Guillermin said that although roentgenologic examination gives many useful data, it alone is insufficient for making a diagnosis and especially a prognosis. The anamnesis and clinical and laboratory examinations are absolutely necessary for the physician in order to form an opinion of the case.

The Surgical Society of Switzerland

At the annual meeting this year of the Surgical Society of Switzerland, the subject for discussion was the use of iodized alcohol in surgery, the reporters being Drs. Jentzer of Geneva, and Odermatt. Among the papers presented mention should be made of "Medullary Anesthetics," by Dr. A. Matthey; "A Strictly Aseptic Technic in Gastro-Intestinal Surgery," by Dr. Perret; "Heterotopic Mucous Proliferations," by Professor Guggisberg; "Delayed Consolidation, or Pseudarthrosis," by Dr. Brun; "Metastatic Colloidal Goiter," by Dr. Dardel, and "Rare Congenital Bone Deformities," by Dr. Nigot. A long discussion on pancreatitis took place, the reporters being Ruppaner, Schweizer and Kummer, while Professor de Quervain offered an unusual clinic at the Inselspital, as did also Professor Wildbolz.

Broadcasting Medical Lectures

Broadcasting popular lectures on medical questions has now begun. Dr. F. Humbert of Geneva, director of the Section of Hygiene of the League of the Red Cross Societies, spoke recently from the Eiffel Tower on tuberculosis.

Faculty Changes

At the Faculty of Medicine of Geneva, Dr. Maurice Roch, professor of clinical medicine, has been appointed dean. The chair of forensic medicine, for many years ably filled by the late Prof. L. Mégevaud, is now occupied by Prof. D. Naville, who at the same time becomes director of the institute of legal medicine after teaching for forty-five years at the faculty. Dr. A. Eternod, professor of histology and embryology, has retired and Prof. E. Bujard now fills the chair. Dr. Charles Du Bois has been appointed professor of dermatology and syphilography in place of Prof. H. Altramare, who has retired. Dr. Charles Juillard has been made extraordinary professor of surgery.

BERLIN

(From Our Regular Correspondent)

Aug. 14, 1926.

The Emergency Medical Service of Berlin

The emergency medical service in Berlin consists of three subdepartments: (1) the emergency stations, (2) the ambulance service, and (3) information service on hospital beds. There are at present forty-two emergency stations, twenty-five of which are connected with hospitals of various kinds, while seventeen are independent centers. These emergency stations are provided with the necessary equipment for the rendering of first aid, but for extended treatment patients are sent elsewhere. The physician in charge not only treats patients in the emergency station itself but also responds to telephone calls or to summons by messenger. When called outside the station, the physician is equipped with a bag which contains all the medical instruments and bandages that he is likely to need in emergency cases. From patients who are able to pay, a suitable fee is exacted, but the aid given does not depend on the capacity of the patient to pay. Persons of limited means are allowed reductions from the regular fee schedule, while patients without resources are not required to pay anything. As a rule, the health insurance society assumes the payment of the bill for medical service. In the streets of Berlin, lamp posts, with red globes to indicate the location of the nearest emergency station, have been erected. At present, however, the lights are not turned on at night, owing to the need of strict economy in municipal administration.

The ambulance service was taken over by the city of Berlin in 1920 and incorporated with the emergency medical service. The ambulance service has twenty-nine auto-ambulances, which can transport, if need should arise, 200 patients daily, although at present the daily average is only about 130. The total number of patients transported in 1925 was about 50,000. The charges vary somewhat with the hospital to which the patient asks to be sent. For persons of small means, the charges are either reduced or entirely remitted. The receipts from the ambulance service are sufficient to keep up repairs and make all the new purchases needed. After each transport, the bed linen or litter is changed. If the case is of an infectious type, not only the bed linen but also all the appurtenances and the car itself are disinfected. Also the sanitary crew is disinfected. A commission, under the chairmanship of the director of the emergency service, is engaged at present in establishing the standard equipment for auto-ambulances. The central information bureau of the emergency medical service, with its telephone exchange, which is directly connected with all hospitals, emergency stations, ambulance stations and the offices of numerous officials, constitutes the control center of the whole emergency and transport service. The necessary directions can be transmitted by its aid most rapidly to the various branches of the emergency and transport services. Its chief function, however, is the furnishing of information in regard to vacant beds in hospitals. Formerly it was not an uncommon thing for an emergency patient to be driven around from one hospital to another in search of a vacant bed. Now the hospitals report twice a day on the number of vacant beds at their disposal. One needs only to call up the information bureau of the emergency service in order to learn in what hospitals vacant beds are available. After a bed is ordered, it is reserved for several hours awaiting the arrival of the patient. The ambulance, after the patient is admitted at the hospital, does not simply return to the garage, but the driver telephones to the central information bureau and receives orders to go elsewhere. In this manner, unnecessary expense and wear on the equipment are avoided, and, what is more important, every ambulance can, in case of pressing demand, be kept constantly busy.

If, in the event of a catastrophe, all the ambulances are in use, the fire department, which is equipped with the type of litter used in the navy, can be called on to assist.

Dr. Frank, director of the Berlin emergency medical service, the *Rettungswesen,* as it is called here, is about to start on a trip to America to study the systems in vogue there.

The Pathogenesis of Cancer

At a recent meeting of the "West German Women Physicians," Professor Caspari of Frankfort-on-the-Main gave a survey of the present status of research in the exceedingly complex and difficult field of the pathogenesis of cancer. He referred to Rudolf Virchow and to the fact that, in his irritation theory, he had advanced a view the essential correctness of which was being recognized more and more. The controversy whether an inherited taint plays a part in the development of cancer appears to have been decided in the affirmative by the researches of American physicians. On the other hand, the parasite theory—the assumption that there is a specific causative agent of the dreaded affection, after the manner of the causative agents of the ordinary infectious diseases—has been almost universally rejected in recent years, and for reasons the validity of which can scarcely be denied. It is evident that this decision is of great practical importance to the physician. Recently a number of German journals contained a news item to the effect that Dr. Schumacher of Berlin had discovered the causative agent of cancer, but further investigation proved the erroneousness of the statement. It appears that the author, by means of a special staining method, had been able to discover peculiar S-shaped bacilli in the marginal areas of cancer tumors, which he assumed, without further investigation, were the causative agents of the disease, whereas they were doubtless only shreds of elastic cellular tissue. On the other hand, the experiments of the American investigator Rous are of particular value. He found the cause of a malignant neoplasm in chickens to be an invisible virus. Not only with cell-free filtrates but also with fluidextracts from pulverized (thus likewise cell-free) chicken tumors, he was able to produce similar tumors in other chickens, although, to be sure, he found it necessary to use as an irritant kieselguhr, or diatomaceous earth, at the site of the injected material. Strange to say, his procedure failed when applied to mammals. Later, however, the English physician Gye succeeded in developing, by a complicated process, a virus from mouse and rat cancer by adding a "specific factor" to the tumor filtrate. Opposed to this conclusion, based on these and other researches, that cancer is produced by one or possibly several invisible and probably everywhere present causative agents, Professor Caspari advanced a new view, which he termed "the necrohormone theory." According to his theory, necrohormones are substances that develop following cell destruction, and which, in a weak concentration, cause cell irritation and, in a strong concentration, further cell destruction. If, in any part of the organism, there is a portion of the body tissues subsisting under unfavorable conditions of nutrition, and especially if suffering from lack of oxygen, many cells of the tissues will be destroyed, while the surviving cells will gradually adapt themselves to the abnormal conditions of existence, and thus a change in the cellular metabolism may be brought about, which will result in the normal cell being changed into a cancer cell. The further development will depend, to a great extent, on the disposition of the organism concerned. If there is no disposition to cancer, a malignant growing tumor will not develop. Professor Caspari's conception rests, thus, fundamentally on Rudolf Virchow's irritation theory. Of practical importance is the fact that the stage of genuine cancer is preceded by a condition in which the physician can observe microscopically suspicious irregularities of cellular life, which often retrogress without exerting a serious effect on the health of the subject.

BUDAPEST

(From Our Regular Correspondent)

Aug. 2, 1926.

Congress of Hungarian Internists

Hungarian internists gathered recently in Balatonfüred—a picturesque bathing resort on the shores of Lake Balaton.

INSOMNIA

Professor Ranschburg gave an address on the pathology and therapeutics of insomnia. He said that recent researches have confirmed the assumption that the sleep center is in the region of the third cerebral ventricle. In man, however, and chiefly in cultured man, this center learned to subordinate its periodic activity to the organ of mental functions; that is, to the cerebral cortex. Thus, the thought of falling asleep soothes, and the fear of not being able to sleep inhibits, the automatism of this center. Morever, study of the depth of sleep in persons with refreshed and with exhausted nerves proved that sleep and wakefulness are not antagonistic conditions, but transitions; wakefulness passes through drowsiness, slumbering and dreamful dozing to deep and unconscious sleep. In some cases a patient complains of having been awake all night, while those round him state the contrary. The fragments of the ego of the dozing person were vigilant, while the preponderant part of the cerebral cortex was resting or sleeping. Such persons will never suffer from lack of sleep, but they will not feel refreshed. They are more tired on awaking than on going to bed.

The causes of insomnia are chiefly disorders of the nervous system and bodily pain. Physical and climatic treatment is of the first importance. Judicious use of sedative drugs may be valuable and without danger, while with improper use they become inefficacious and detrimental. Drugs may help to restore the function of faulty nervous centers. Diet and a daily regimen is important. A regimen based on the condition of the individual patient is the method of choice.

SURGERY OF THE GALLBLADDER

Prof. Tibor Verebelyi read a paper which was based on 1,314 operations for gallstones. He opposes the view that the seat of the formation of gallstones is in the liver. He carefully examined the stones and gallbladders from several hundred recent operations, and is of the opinion that gallstones are formed in the gallbladder. He is led to the conclusion that the presence of gallstones and the development of cancer of the gallbladder and gall ducts is in some measure connected; not that cancer is caused by gallstones, but that the changes caused by gallstones pave the way for the formation of cancer. The accusation against surgical treatment of gallstone disease, that the disease beings again, is unfounded. In cases wherein it did return, the cause could be sought in neglect of the cases. Cure of gallstone disease with unobjectionable result will be achievable when early operation is the rule. Of course, this does not mean, concluded Professor Verebelyi, that experiments with proper nonsurgical treatment should not be made.

CESAREAN SECTION

Prof. Stephan Toth pointed out that at present cesarean section is not excessively dangerous. If the uterus has not been infected prior to operation, recovery takes place as certainly as after any other laparotomy. The fetus likewise survives the operation. He showed drawings illustrating how the operation is performed today, and also historical steel cuts showing how it was done a hundred years ago. In times gone by, cesarean section was employed only if the fetus could not be delivered by the usual methods. Nowadays the complications for which the operation is performed are much more dangerous than the operation itself. Toth performed ninety-six cesarean sections in the last eight years. In these cases every child was delivered alive. Three mothers died, but their deaths cannot be attributed to the operation. Although every practitioner ought to know how to perform a cesarean section, his more important duties are to recognize the complications of pregnancy which call for cesarean section, and to send the patient to the nearest hospital in due time.

INDICATIONS FOR CARBON DIOXIDE BATHS

Dr. Francis Schmidt, lecturer on balneotherapy, said that many physicians are of the opinion that carbon dioxide baths are contraindicated in the presence of hypertension, angina pectoris and a decompensating heart. However, he has proved that carbon dioxide baths, if given skilfully, reduce hypertension, calm the nervous system, and thereby improve the condition of the patient. Many decades ago the sick and the healthy used the baths indiscriminately and without control. Thus, some untoward consequences resulted and the baths became disapproved by many physicians. Today the temperature and the carbon dioxide content of the water can be regulated according to individual needs. Thus, carbon dioxide baths can be used with success even in cases in which, of old, they would have been forbidden.

Marriages

Dowling Blufford Stough, Jr., Hot Springs National Park, Ark., to Miss Mary Tansill Hay of Little Rock, July 19.

George Thomas Alexander, Moulton, Ala., to Miss Anne Bert Webb of Atlanta, Ga., June 19.

Isaac R. Pels, Baltimore, to Miss Margaret Riggs Black of Howard County, Md., August 26.

Philip D. Bunce, Hartford, Conn., to Miss Julia Locke Frame of New York, July 27.

Jerome L. Rosengard to Miss Sylvia Pollack, both of Chicago, July 25.

Deaths

Richard Henry Lewis, Raleigh, N. C.; University of Maryland School of Medicine, Baltimore, 1871; professor of diseases of the eye and ear, Savannah Medical College, 1875-1876; professor of diseases of the eye, and of hygiene, University of North Carolina, 1902-1909; past president of the Conference on State and Provincial Boards of Health of North America, the American Public Health Association, the North Carolina Tuberculosis Association, and member and past president of the Medical Society of the State of North Carolina; member of the state board of medical examiners, 1884-1888, and the board of aldermen of Raleigh, 1884-1885; secretary-treasurer, North Carolina State Board of Health, 1892-1909; aged 76; died, August 6.

Allen John Smith, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1886; member of the American Association of Pathologists and Bacteriologists; professor of pathology and comparative pathology, in charge of the course in tropical medicine, and formerly dean at his alma mater; on the faculty of the University of Texas Department of Medicine, Galveston, 1891-1903; served during the World War; author of "Lessons and Laboratory Exercises in Bacteriology"; aged 62; died, August 18, following a long illness.

John Wesley Long ⊕ Greensboro, N. C.; Vanderbilt University School of Medicine, Nashville, 1883; University of Nashville Medical Department, 1884; emeritus professor of diseases of women and children, Medical College of Virginia, Richmond; member of the House of Delegates of the American Medical Association, 1916-1917; past president of the Medical Society of the State of North Carolina, and the Southern Surgical Association; proprietor of a hospital bearing his name; aged 67; died, August 1, of coronary thrombosis.

John Leo Tierney ⊕ St. Louis; St. Louis University School of Medicine, 1914; assistant professor of medicine at his alma mater; member of the American College of Physicians; formerly on the staffs of St. Mary's, Frisco, St. John's and the St. Louis City hospitals; served during the World War; aged 35; died, July 28, at his summer home in Santa Fe, N. M., of angina pectoris.

Elon Obed Huntington ⊕ Lieutenant Commander, U. S. Navy, retired, DeLand, Fla.; Medical Department of Columbia College, New York, 1896; was appointed an assistant surgeon in 1898, and retired in 1910 on account of disability incident to the Service; Spanish-American and World War veteran; aged 56; died, August 3, at the DeLand Memorial Hospital.

Clayton D. Fretz, Sellersville, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1868; member of the Medical Society of the State of Pennsylvania; formerly president of the Sellersville National Bank; aged 81; died, August 17, at the Lankenau Hospital, Philadelphia.

John J. Steiner ⊕ Richfield, Utah; Homeopathic Medical College of Missouri, St. Louis, 1889; College of Physicians and Surgeons, Baltimore, 1901; aged 63; died, July 19, following an operation for abscess of the liver.

William Bertram Berninger, Allen, Okla.; Central College of Physicians and Surgeons, Indianapolis, 1905; member of the Oklahoma State Medical Association; aged 43; died, June 18, of acute dilatation of the heart.

N. P. Carey, East Fairfield, Vt.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1902; died, August 7, at a hospital in St. Albans, of injuries received in an automobile accident.

Joseph Lorenzo Baker, Carlton, Ga.; Southern Medical College, Atlanta, 1884; Atlanta Medical College, 1885; member of the Medical Association of Georgia; aged 65; died, July 23, of pneumonia.

Elizabeth Ella Courtney, Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1926; aged 35; died, July 17, at the Grant Hospital, following an operation for goiter.

Locero Jackson Gibbs, Chicopee Falls, Mass.; Dartmouth Medical School, Hanover, N. H., 1875; member of the Massachusetts Medical Society; Civil War veteran; aged 81; died, July 12.

Godfrey Frederick Shimonek, Yonkers, N. Y.; Rush Medical College, Chicago, 1873; formerly professor of surgery at the Milwaukee (Wis.) Medical College; aged 74; died, June 27.

William Fletcher McNutt, Jr., San Francisco; Medical School of Harvard University, Boston, 1900; M.R.C.S., England, 1902; aged 50; died, August 10, of aortic regurgitation.

Howard Lewis Kaucher ⊕ Boundbrook, N. J.; Medico-Chirurgical College of Philadelphia, 1900; formerly on the staff of the Riverlawn Sanatorium; aged 48; died, August 3.

Gilson Ewing Townsend, Bowling Green, Ky.; Vanderbilt University Medical Department, Nashville, 1879; formerly mayor; aged 68; died, August 22, following a long illness.

Orr Hileman Shaffer, Miami, Fla.; Jefferson Medical College, Philadelphia, 1896; formerly on the staff of the Altoona (Pa.) Hospital; aged 57; died, in July, at Rochester, Minn.

Charles Louis Bonnemer, Montz, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1897; coroner of St. Charles Parish; aged 53; died, August 10.

George Ellis Putney ⊕ Paynesville, Minn.; Medical School of Harvard University, Boston, 1876; formerly on the staff of the Paynesville Hospital; aged 80; died, June 23.

Emmett D. Page, Brooklyn; Long Island College Hospital, Brooklyn, 1882; member of the Medical Association of the State of New York; aged 73; died, July 30.

George Gardner Phelps, Utica, N. Y.; Medical Department of the University of the City of New York, 1884; aged 64; was found dead, July 15, of heart disease.

Eva W. Lake, Demarest, N. J.; Woman's Medical College of Pennsylvania, Philadelphia, 1891; aged 67; died, July 29, at Detroit, of carcinoma of the stomach.

William Callaway Estes, Atlanta, Ga.; Atlanta Medical College, 1895; president of the Rex Bank; aged 69; died suddenly, August 12, at his home in Rex.

Edmund N. Daniels ⊕ Beloit, Kan.; University Medical College of Kansas City, Mo., 1900; on the staff of the Beloit Hospital; aged 56; died, July 22.

Theodore J. Peterson ⊕ Chicago; Dearborn Medical College, Chicago, 1905; aged 69; died, July 1, of chronic myocarditis and endocarditis.

John Milton Shaw, Victoria, B. C., Canada; Trinity Medical College, Toronto, Ont., 1880; aged 67; died, March 25, of cerebral thrombosis.

John J. C. Ross, Bloomington, Ind.; Cincinnati College of Medicine and Surgery, 1885; aged 67; died, August 19, of heart disease.

Frederick Brakeman Sutton, Birmingham, Ala.; University of Michigan Medical School, Ann Arbor, 1881; aged 66; died in July.

Cornelius Cooper Abbott, Cincinnati; Medical College of Ohio, Cincinnati, 1896; aged 65; died, August 13, of cerebral hemorrhage.

Lucius Gerald FitzGerald, Port Huron, Mich.; Detroit Medical College, 1877; aged 76; died, August 7, of cerebral hemorrhage.

Charles Sumner Minnich ⊕ Palmer, Neb.; Medical College of Ohio, Cincinnati, 1884; aged 67; died, July 4, of cerebral hemorrhage.

Francis L. Ingram, Stewardson, Ill. (licensed, Illinois, 1878); aged 90; died, August 10, at the home of his son in St. Louis.

Joseph Tyndall Sparks, Yeddo, Ind. (licensed, Indiana, 1897); aged 73; died, August 1, of carcinoma of the throat.

Richard W. Taylor, Pewaukee, Wis.; Hahnemann Medical College and Hospital, Chicago, 1893; aged 74; died, July 2.

William Bartholow McDonald, Baltimore; Baltimore Medical College, 1897; aged 52; died, July 17, of heart disease.

Francis Gaylord Fisher, Rockford, Mich.; Detroit College of Medicine and Surgery, 1906; aged 42; died, August 10.

George Israel Rochelle, New York; College of Physicians and Surgeons, Baltimore, 1898; aged 58; died in August.

Halsey D. Snover, Steamburg, N. Y.; University of Buffalo Department of Medicine, 1884; aged 59; died, July 26

Edgar R. Ferguson, Coaldale, Ark. (licensed, Arkansas, 1903); aged 54; died, August 13, of heart disease.

Romy W. Burch, Ekron, Ky.; Kentucky School of Medicine, Louisville, 1893; aged 56; died, July 26.

Reinbold Speer ⊕ St. Louis; St. Louis University School of Medicine, 1904; aged 59; died, July 7.

O. S. Whipp, Bradenton, Fla. (licensed, Florida, year unknown); aged 75; died recently.

Edith May Brooks ⊕ Boston; Tufts College Medical School, Boston, 1902; died, July 1.

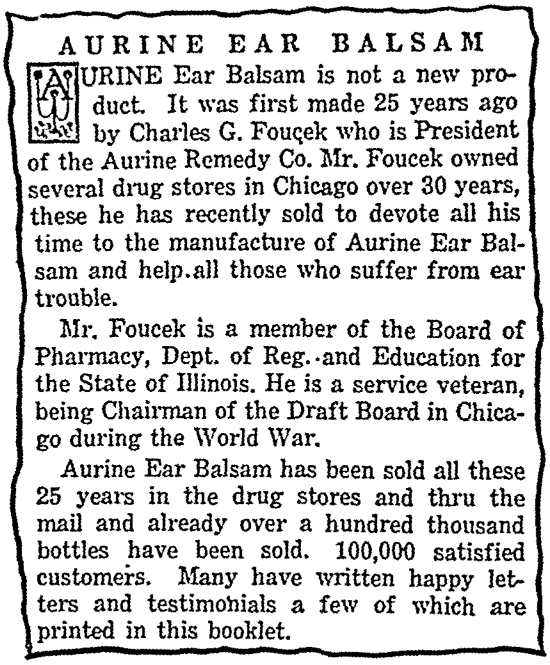
The Propaganda for Reform

In This Department Appear Reports of The Journal's Bureau of Investigation, of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other General Material of an Informative Nature

AURINE EAR BALSAM

More Deafness Cure Quackery

"Aurine Ear Balsam" is put out by the Aurine Remedy Company of Chicago. The main thesis of the Aurine Ear Balsam advertising is that a Mr. Folds, who had "suffered fifteen years," was "relieved almost at once" by the balsam. According to Folds' story, as published in the Aurine advertising matter, he had earaches and head noises from early childhood. The physicians to whom he went did not help him and the trouble got worse until, by the time he was fifteen, he was partly deaf. He claims to have had discharges from the ear and to have suffered intense pain. He tried ear 'phones and rubber ear drums, and "a great number of other preparations," but they either did not help him or made matters worse. Then Aurine Ear Balsam came into his life and after he had used two bottles his troubles were over. The discharge stopped and the ringing and buzzing in the ears disappeared.



AURINE EAR BALSAM

AURINE Ear Balsam is not a new product. It was first made 25 years ago by Charles G. Fouçek who is President of the Aurine Remedy Co. Mr. Foucek owned several drug stores in Chicago over 30 years, these he has recently sold to devote all his time to the manufacture of Aurine Ear Balsam and help.all those who suffer from ear trouble.

Mr. Foucek is a member of the Board of Pharmacy, Dept. of Reg.-and Education for the State of Illinois. He is a service veteran, being Chairman of the Draft Board in Chicago during the World War.

Aurine Ear Balsam has been sold all these 25 years in the drug stores and thru the mail and already over a hundred thousand bottles have been sold. 100,000 satisfied customers. Many have written happy letters and testimonials a few of which are printed in this booklet.

Photographic reproduction of part of the advertising material accompanying Aurine Ear Balsam.

Mr. Folds, it seems, is Milton W. Folds, the manager of Aurine Remedy Company. Aurine is the alleged discovery of one Charles C. Foucek, who is president of the Aurine Remedy Company. Foucek, according to the advertising, owned several drug stores in Chicago for over thirty years, and recently sold these in order to devote all his time to the manufacture and exploitation of Aurine Ear Balsam. It is stated, further, that Mr. Foucek is a "member of the Board of Pharmacy, Department of Registration and Education for the State of Illinois."

According to the Aurine "literature," the daily use of the balsam will cause discharges from the ear to stop, will remedy the deafness of old age, and restore thickened, relaxed or shrunken drums to their natural condition. Of course, the Aurine concern plays up testimonials. From reading these, the deaf will get the impression that Aurine Ear Balsam will cure deafness and other ear troubles.

The price of Aurine Ear Balsam is $2 a package. The purchaser gets a one-ounce bottle of the "balsam," an elongated toothpick with a pledget of cotton on one end, a medicine dropper, and a small wad of absorbent cotton. The deaf are told to instil three or four drops of the balsam into each affected ear once a day, and to clean the external meatus every other morning with the swab. It is suggested that "it is a good idea to put fresh cotton on the ear swab each time it is used." Those with discharging ears are told to mix five drops of the balsam with four tablespoonfuls of warm water and inject the mixture into the ear with a glass dropper every alternate day.

Some bottles of Aurine Ear Balsam were purchased and turned over in their unopened original packages to the A. M. A. Chemical Laboratory for analysis. The Laboratory reports:

LABORATORY REPORTS

"Five original packages of Aurine Ear Balsam (Aurine Remedy Company, 1832 South Racine Avenue, Chicago, Illinois), were submitted to the A. M. A. Chemical Laboratory for examination. In each package was a one-ounce amber bottle containing 30 cc. (approximately one fluidounce) of a thick, syrupy, brownish liquid with some suspended material, having an aromatic odor, resembling essential oils, such as eucalyptol and menthol. On placing two drops on the tongue there was noted a sweet taste (resembling glycerin) followed by a slight numbness, suggestive of a local anesthetic; the reaction of the mixture to litmus was acid. The specific gravity at 25 C. was 1.1685. No statement as to the composition was given on the trade package or in the accompanying circular. Qualitative tests indicated the presence of glycerin, boric acid, a trace of sulphate, and a substance yielding an alkaloidal reaction. (This reaction is also given by local anesthetics). The alkaloidal substance yielded tests which were suggestive of the local anesthetic Butyn,[1] *p*-aminobenzoyl-γ-dinormalbutylaminopropanol sulphate. — γ-dibutylaminopropyl-*p*-aminobenzoate.-*N*-sulphate.—$[NH_2.C_6H_4.COO(CH_2)_3.N(C_4H_9)_2]_2.H_2SO_4$.

"The aromatic oils resembled eucalyptol and menthol in odor, with other oils not identified. Heavy metals and organic acids were not found.

"Quantitative determinations yielded the following:

"Ash	0.2 per cent
"Boric acid	0.8 per cent
"Glycerin — calculated from the specific gravity, at least	60.0 per cent
"(Approximately 50 per cent was isolated in pure form)	
"'Alkaloidal' substance	0.1 per cent

"From the foregoing it may be concluded that Aurine Ear Balsam is essentially a colored aromatic 66 per cent solution of glycerin to which has been added a very small amount of boric acid and a local anesthetic resembling Butyn."

Aurine Ear Balsam, then, in the light of the analysis just given, is essentially glycerin with a small amount of boric acid, and this simple mixture is sold under the claim that no matter what ear ailment you may be suffering from, you will get relief if you will use Aurine. A nice business for a "member of the Board of Pharmacy, Department of Registration and Education for the State of Illinois" to be engaged in!

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[1] The free base was an oily substance; with hydrochloric acid it yielded crystals which in the quantities present could not be purified sufficiently to take the melting point. The product responded to various reactions described by Warren (J. A. Pharm. A. **12**: 512, 1923). It yielded a picrate which, according to thermal analysis, indicated the product to be a picrate of the base of Butyn.

Incidence of Diabetes in United States.—The Metropolitan Life Insurance Company asserts that there are a million persons with diabetes in the United States and that the disease is more prevalent among Jews than among other peoples. The three districts having the highest number of diabetics and in which the death rate is about 15 per hundred thousand are: (1) New England and the districts in and near New York, with Vermont, New Hampshire, Maine, New York and New Jersey leading the list in this section; (2) California, Oregon and possibly Washington; (3) the section in the Middle West including Indiana, Michigan, Illinois and Missouri.

Correspondence

THE SURGICAL TREATMENT OF SPASTIC PARALYSIS BY SYMPATHETIC RAMISECTION

To the Editor:—In The Journal, June 19 and 26, the relationship of the sympathetic nervous system to the surgery of spastic paralysis as advocated by myself is discussed. There are a few comments I should like to add to the discussion. In the first case, Dr. Steindler struck the right note when he suggested that the investigation should be investigated. Let me deal first of all with the statements of Drs. Forbes and Cobb. They are evidently unfamiliar with my original paper, or they would not make the statement that Hunter's theory and experiments preceded the operative treatment. As a matter of fact, with my first paper (A New Operative Procedure in the Treatment of Spastic Paralysis and Its Experimental Basis, *M. J. Australia* **1**:77 [Jan. 26] 1924) John I. Hunter (The Postural Influence of the Sympathetic Innervation of Voluntary Muscle, *M. J. Australia* **1**:86 [Jan. 26] 1924) published a neurologic comment that was built up out of the results I obtained from my experiments and operations. It was the facts obtained from my experiments that enabled me to carry out with confidence the operation on the human subject. Hunter's experiments on the wing of the bird (The Significance of the Double Innervation of Voluntary Muscle Illustrated by Reference to the Maintenance of the Posture of the Wing, *M. J. Australia* **1**:581 [June 14] 1924) were carried out about one year after my experiments on the goat, and were published as additional evidence corroborating the results I obtained on the goat and the human subject.

Alexander Forbes and Stanley Cobb (Physiology of Sympathetic Nervous System in Relation to Certain Surgical Problems, The Journal, June 19, 1926, p. 1884) relate their experimental experience and report results that were by no means uniform. In their whole series there is slightly less rigidity on the operated side. Further, they quote from Kuntz and Kerper (*Am. J. Physiol.* **76,** No. 1, 1926), who found a consistent diminution of tone following sympathectomy. Kuntz and Kerper carried out experiments on dogs, which reproduced exactly the results that I obtained in the goat. They did not decerebrate their dogs, but, on placing them under anesthesia, found changes similar to those I had described in connection with the decerebrate animal. Their observations offer a great contrast to the failure recorded by Forbes, Cobb and Davis.

Can any fair minded critic say that these results contradict mine, or in any way depreciate the result that I obtained from experiments on goats? No one has yet attempted to reproduce my experiments on goats, and, in contrast to the experiments related by Forbes and Cobb, I did get a consistent result throughout the whole series, and, so striking was this result that I find it difficult to believe that any one could carry out the same procedure and not be struck with the behavior of the limb deprived of its sympathetic nerve supply.

With regard to Dr. Davis' criticisms, it is refreshing to notice that Kuntz and Kerper repeated Hunter's experiments on the wing of the bird and corroborated his observations. Dr: Davis' repetition of Walshe's criticism, that Hunter must have injured the anterior nerve roots in his experiments, is not consistent with the fact that these birds could fly quite well after the sympathetic nerves had been removed. Surely, injured nerve roots causing changes in posture are not consistent with voluntary control sufficient to maintain a flight.

Dr. Davis (Davis, Loyal; and Kanavel, A. B.: The Effect of Sympathectomy on Spastic Paralysis of the Extremities, The Journal, June 19, 1926, p. 1890) relies for his criticism of my results on experiments conducted on cats. While in Chicago I had an opportunity of examining one of the cats employed by Dr. Davis and of pointing out to him changes in the operated side similar to those described by Kuntz and Kerper. I understood from his conversation that he admitted that these changes were present, but the admission has not yet appeared in his papers. His difficulty occurs in the decerebrate animal, and it is yet to be proved that his method is not open to objection. He says that I used the guillotine method in performing decerebration, but again, reference to my paper of December, 1924 (*Surg. Gynec. Obst.*), will show that his quotation is not accurate. I have distinctly stated that decerebration was carried out by gradually removing the brain until the appropriate level was reached; in fact, in some instances a cautery was used, until extension appeared in the head and in all four limbs.

But, I have also carried out experiments in the cat and I find that by adopting the same technic a result is obtained that does not differ in any material respect from that obtained in the goat. There is, however, greater difficulty in removing the abdominal sympathetic trunk; and as the limbs of a cat are considerably smaller than those of a goat, the changes are not as evident.

With regard to the clinical evidence: The operations performed by Drs. Kanavel, Pollock and Davis were not on subjects I would have chosen; but, even so, they did not completely fail to confirm my results, as they have contended. These authors (*Arch. Neurol. & Psychiat.* **12**:197-225 [Feb.] 1925) show photographs of a man balancing on the right foot, which he could not do before operation. Another photograph illustrates the change in the range of movement in the right upper limb. Surely, this is a positive result, and some change did occur in this patient.

Dr. W. B. Carrell (The Journal, June 26, 1926, p. 1978) carried out thirty-five ramisections, following which, he says, "improvement in function has not been marked, but in fifteen cases the gait was improved to the extent of more ease in flexing and bending the knee and walking with less rigidity." It is hard for me to believe that there was not more ease in bending and flexing the hip and the ankle as well in such patients. The parents and patients themselves were pleased with the improvement. Surely this is a positive result. Dr. Carrell does not state whether the Little's disease was of the paraplegic type or hemiplegic type, so that I am unable to criticize his statements further.

I am aware that Dr. Davis tells us (*Surg. Gynec. Obst.*, March, 1926) that "to rely upon a patient's statements or the simple observations of a patient's limb following operation is not only untrustworthy, but wholly unscientific." Apparently this applies only to patients who have been treated by ramisection for spastic paralysis, for I have no doubt that Dr. Davis relies on his patients' statements concerning relief of pain from trigeminal neuralgia after operation, as I rely on my patients' statements when they tell me that they can now walk, or their stride has become longer, or they can now balance on their limbs, or they can walk backward, when this was impossible before operation. And as regards the simple observation of the patient's limbs, Dr. Carrell was satisfied that his moving pictures showed change in the range of movement. The electromyographs relied on by Dr. Davis still need interpretation.

The less favorable results obtained by Dr. Carrell in the upper limb are easily explained. In the upper limb it is much more difficult to do a complete operation and, in addition to that, the patient has not to use it as he has the lower limb. If Dr. Carrell were to put the good limb out of action, correct deformities in the defective limb and go in for intensive physical education of the defective limb, these patients would rapidly improve.

In the light of these comments, it is perhaps a little premature to say with the writer in the Chicago *Daily News* of April 2, 1926, that the work put forward by Hunter and myself is largely discredited, and further to say, "Thus passes a widely lauded discovery, demonstrating anew the manner in which modern intensive methods of scientific research establish quickly true progress or fallacy in medical investigation." This sounds as if the above mentioned gentlemen have a monopoly of scientific research; but in addition to my results, they have now to disprove those of Kuntz and Kerper, whose experiments have apparently been very carefully carried out.

In conclusion, I have to state that in this country at least, the surgical results of ramisection in the treatment of spastic paralysis exceed those of any other method yet suggested, and these results are not obtained by me alone. For example, in the well known Royal Alexander Hospital for Children, at Sydney, Dr. R. B. Wade, senior surgeon, now considers ramisection the operation of choice in congenital spastic paraplegia.

N. D. Royle, Craignish,
185 Macquarie Street,
Sydney, Australia.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MOSQUITO BITES

To the Editor:—I have a patient, a boy, aged five, who is terribly poisoned by the bite of the mosquito. Each bite causes considerable swelling and intense itching. The child scratches the bites, changing them quickly into sores that ooze serum. At times his legs and arms are covered with sores. Local applications to keep the mosquitoes away seem to be of little use. The condition is so severe that the mother has raised the question of the value of internal treatment or the possibility of inoculations. I am writing to ask if you can suggest something besides the usual local treatment.

C. H. Sanford, M.D., Tewksbury, Mass.

Answer.—The child should be protected as much as possible from mosquitoes by means of clothing and screens. Local application of calamine lotion containing sodium biborate and 1 per cent menthol should be made immediately after the bites have occurred, and continued as long as the irritation exists. There appears to be no reason why any kind of inoculation would be of value.

COOKING IN ALUMINUM UTENSILS

To the Editor:—The Aluminum Company, which has salesmen throughout the country demonstrating a new process aluminum cooking utensil, claims that the use of this utensil enables the housewife to cook her meats and vegetables without water, preserving both the taste and the important food elements. Are these claims substantiated by the observations of known food authorities? Please omit my name.

M.D., Chicago.

Answer.—There seems to be no reason why food should not be properly cooked in aluminum cooking utensils without the addition of water. Authorities on dietetics are in general agreed that the boiling in water removes the components that are soluble, thus depriving the food of various mineral salts and fat.

According to Friedenwald and Ruhrāh, when beef is cooked in water, from 3.25 to 12 per cent of the nitrogenous matter, 0.60 to 37 per cent of the fat, and 20 to 67 per cent of the mineral matter of the original uncooked meat may be found in the broth.

Vegetables cooked in water gain water and lose part of their carbohydrates and proteins and much of their mineral matter, and nearly the whole of their nonprotein nitrogenous component. There is no evidence to indicate that the cooking of food in aluminum utensils without water is in any way harmful.

STERILIZATION OF NONBOILABLE CATGUT

To the Editor:—I have been using chromic catgut in tubes, which we have been in the habit of boiling with the instruments. Recently we received a shipment of Hauder's chromic catgut which was labeled nonboilable. Before the label was noticed, the catgut was boiled with the instruments and used as before. No difference was noticed during the operation, which was for ventral hernia. Please tell me what damage is done to the catgut by boiling, and what effect it will have on the success of the hernia operation?

M.D., Mississippi.

Answer.—The difference between boilable and nonboilable catgut suture material lies mainly in the method of sterilization of the tube; that is, some surgeons prefer to keep their catgut tubes in antiseptic solutions until ready to be used. Others prefer to boil the tubes with the instruments. To make this possible, two different tubing solutions are used; that is, the fluid in which the suture material is immersed. One solution lends itself to boiling; the other does not. When the nonboilable tube is boiled, the contained catgut is apt to gelatinize, as it is far more friable, less stiff, than the catgut of the boilable tube; but that does not change the time of absorption of the catgut in the tissues. It is better, however, not to boil the nonboilable catgut because, at best, the absorption of catgut is more or less problematic. It may occur more rapidly than is the rule. Sutures are used only to insure immobility; they do not promote or hasten union, except so far as they keep the healing tissue at rest.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

American Board for Ophthalmic Examinations. Colorado: Denver, Sept. 13. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

American Board of Otolaryngology. Colorado: Denver, Sept. 13. Sec., Dr. H. W. Loeb, 1402 So. Grand Blvd., St. Louis, Mo.

Arizona: Phoenix, Oct. 5. Sec., Dr. W. O. Sweek, Phoenix.

California: Sacramento, Oct. 18-21. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

Colorado: Denver, Oct. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Connecticut: State Board of Healing Arts, New Haven, Oct. 9. Prerequisite to license examinations. Box 1895, Yale Station, New Haven.

District of Columbia: Oct. 12. Sec., Dr. Edgar P. Copeland, Suite 110, 1801 Eye Street, Washington.

Florida: Tallahassee, Oct. 12-13. Sec., Dr. William M. Rowlett, Box 603, Tampa.

Georgia: Atlanta, Oct. 12-14. Sec., Dr. C. T. Nolan, Marietta.

Idaho: Boise, Oct. 5. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

Illinois: Chicago, Oct. 5-7. Supt., Regis. and Education, Mr. V. C. Michels, Springfield, Ill.

Iowa: Des Moines, Oct. 12-14. Commissioner, Dept. of Health, Dr. Don M. Griswold, Des Moines.

Kansas: Topeka, Oct. 12. Sec., Dr. Albert S. Ross, Sabetha.

Michigan: Lansing, Oct. 12-14. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

Minnesota: Minneapolis, Oct. 5-7. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

Montana: Helena, Oct. 5-7. Sec., Dr. S. A. Cooney, Helena.

Nevada: Carson City, Nov. 1. Sec., Dr. Simon L. Lee, Carson City.

New Jersey: Trenton, Oct. 19-20. Sec., Dr. Charles G. Kelley, Trenton.

New Mexico: Santa Fe, Oct. 11-12. Sec., Dr. W. T. Joyner, Roswell.

New York: Albany, Buffalo, New York and Syracuse, Sept. 20-23. Chief, Professional Exams. Bureau, Mr. Herbert J. Hamilton, State Education Building, Albany.

Oklahoma: Oklahoma City, Sept. 14-15. Sec., Dr. J. M. Byrum, Shawnee.

Rhode Island: Providence, Oct. 7-8. Sec., Dr. B. U. Richards, Providence.

Utah: Salt Lake City, Oct. 5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

Wisconsin: Basic Science Board, Madison, Sept. 18. Sec., Dr. M. F. Guyer, University of Wisconsin, Madison.

Wyoming: Cheyenne, Oct. 4-6. Sec., Dr. G. M. Anderson, Cheyenne.

Virginia June Examination

Dr. J. W. Preston, secretary of the Virginia Board of Medical Examiners, reports the written examination held at Richmond, June 16-19, 1926. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Eighty-three candidates were examined, all of whom passed. Fifteen candidates were licensed by reciprocity and one by endorsement of his credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Johns Hopkins University Medical Dept.		(1925) 86, (1926)	90
Meharry Medical College		(1926)	81
University of Tennesee College of Medicine		(1926)	83.5
Medical College of Virginia		(1923) 89, (1925) 89, (1926)	80, 81, 82, 82, 82, 83, 83, 83, 83, 84, 84, 84, 84, 84, 85, 85, 85, 86, 86, 86, 86, 86, 86, 86, 86, 86.5, 87, 87.5, 88, 88, 88, 88, 88, 88, 89, 89, 89, 89, 90, 90, 90, 90, 90, 90.5, 91, 92, 93, 94
University of Virginia Department of Medicine		(1925)	88, 88, 88, (1926) 82, 83, 85, 85, 86, 86, 86.5, 86.5, 87, 87, 88, 88, 88, 88, 89, 89, 89, 89.5, 90, 90, 90, 90, 92, 93, 93, 95

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University Medical School		(1921)	Maryland
University of Georgia Medical Department		(1925)	Georgia
College of Physicians and Surgeons, Chicago		(1890)	Wisconsin
Hering Medical College, Chicago		(1910)	Illinois
Indiana University School of Medicine		(1923)	Indiana
College of Physicians and Surgeons, Baltimore		(1891)	N. Carolina
University of Maryland School of Medicine		(1923)	N. Carolina
University and Bellevue Hospital Medical College		(1918)	New York
North Carolina Medical College		(1917)	W. Virginia
University of Pennsylvania School of Medicine		(1917)	Minnesota
Medical College of the State of South Carolina		(1924)	S. Carolina
Meharry Medical College		(1924)	W. Virginia
University of Tennessee College of Medicine		(1910)	Tennessee
Vanderbilt University School of Medicine		(1900)	Utah
University of Texas Department of Medicine		(1924)	Texas

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Yale University School of Medicine		(1924)	N. B. M. Ex.

Book Notices

An Introduction to Surgery. By Rutherford Morison, M.D., F.R.C.S., M.A., and Charles F. M. Saint, C.B.E., M.D., M.S., Professor of Surgery, Cape Town University, South Africa. Second edition. Cloth. Price, $4.50. Pp. 347, with 183 illustrations. New York: William Wood & Co., 1926.

This deals with the basic principles of surgery. It is essentially a student's textbook, and an excellent one. No man can meet present-day standards of surgery without a comprehensive knowledge of the perversions of physiology and of anatomy. Such problems of regional surgery presented, for instance, in appendicitis, peptic ulcer or cancer depend for their solution on detailed knowledge of such elemental subjects as inflammation, gangrene, ulcer, fistula, and the manner of origin, growth and spread of malignant tumors. The various chapters cover shock, wounds, hemorrhage, infection, gangrene, specific infections, malignancy and allied topics of general surgery. The book, though small, is surprisingly complete; it is systematic and well written. It deserves the attention of instructors in surgery.

L'Insuline. Par Dr. Émile Aubertin, Chef de clinique médicale à la Faculté de médecine de Bordeaux. Préface du Professeur agrégé P. Mauriac, Médecin des hôpitaux. Paper. Price, 45 francs net. Pp. 499. Paris: Gaston Doin & Cie, 1926.

The author has reviewed much of the voluminous literature stimulated by the discovery of insulin and has performed a service by classifying these contributions simply and clearly. This is probably the most complete review of the subject that has appeared, and it will doubtless remain in France a basic review of the literature on insulin. Clinical researches and observations and experimental studies on normal and depancreatized animals by the author and his colleagues are included. The book is divided into three parts: the discovery, manufacture and nature of insulin; its physiologic properties and mode of action, and its therapeutic utilization. A detailed table of contents is serviceable because of the clear arrangement of material under numerous subtitles; an index is lacking.

FACTS ON THE HEART. By Richard C. Cabot, M.D., Professor of Medicine and of Social Ethics at Harvard University. Cloth. Price, $7.50 net. Pp. 781, with 163 illustrations. Philadelphia: W. B. Saunders Company, 1926.

This work is unique in that its conclusions are based wholly on the study of cases that came to necropsy. The pathologic material was obtained from 4,000 necropsies performed in the Massachusetts General Hospital from 1896 to 1919. Of these, 1,906 were cases of cardiac disease, and in them, 4,143 lesions were studied. Most of the book is made up of illustrative case reports including history and course, physical and postmortem findings, and discussion, a method of presentation of which Dr. Cabot is a master. Practically all that is given as regards treatment is incorporated in these reports. They will be read with interest and profit notwithstanding the introductory suggestion to concentrate on the opening and closing chapters and the section summaries. The author is convinced that most cases diagnosed heart disease by the physician or suspected by the patient are not genuine heart disease. More than 90 per cent of all cases of true cardiac disease were found to belong to a group divided into rheumatic, syphilitic and hypertensive types. Of these the hypertensive type was by far the most frequent (77 per cent of all cases). Mitral stenosis uncomplicated is about twice as common as any other single rheumatic valve lesion; alone or in combination it is about three times as common as all other rheumatic lesions combined. Of mitral regurgitation, diagnosed more frequently than any other lesion, only seven cases were observed in 4,000 necropsies, and of these three were more or less doubtful. This is a most important observation and justifies the conclusion that a clinical diagnosis of mitral leak is not warranted. Of greatest practical importance in this essentially practical volume is the discussion of mitral regurgitation and the lack of significance of systolic murmurs per se. The book, as intimated, contains a wealth of material. It is abundantly illustrated, has a characteristic, pleasing style, and presents facts of great clinical importance.

LEHRBUCH DER SYSTEMATISCHEN ANATOMIE. Von Professor Dr. Julius Tandler, Vorstand der 1. anatomischen Lehrkanzel, Wien. 1. Band, Knochen-, Gelenk- und Muskellehre. Second edition. Paper. Price, 36 marks. Pp. 467, with 352 illustrations. Leipsic: F. C. W. Vogel, 1926.

The original edition of this volume was exhausted in 1923, and the second edition now appears. The third volume of the first edition has yet to be published. The first volume treats of the bones, joints and muscles with clearness and thoroughness. The illustrations are of unusually good quality and unusually instructive. Especially good features are the articles on the mechanical working of the joints. No attempt has been made to incorporate any account of the minute anatomy of the structures considered, and the history of development is reserved for a special section in the last volume. The grouping of muscles, however, is arranged in accordance with their development and innervation, and is thus an improvement on the grouping ordinarily adopted in textbooks of anatomy. The second edition has afforded opportunity for a few slight alterations in the text and for the introduction of four additional illustrations. Students and physicians will find it a sound and reliable textbook.

PSYCHOTHERAPY. Mental Elements in the Treatment of Disease. By Edward Wyllys Taylor, James Jackson Putnam Professor of Neurology in Harvard University. Harvard Health Talks, 14. Cloth. Price, $1. Pp. 53. Cambridge: Harvard University Press, 1926.

This brief volume constituted one of the health talks in the Harvard series. It serves a useful purpose in tracing the development of mental healing from the earliest times, through the periods of miracles, mysticism and religious domination, through charlatanism, including mesmerism and animal magnetism, down to the beginning of scientific methods. Here special reference is made to hypnotism and the work of Charcot, Janet, Freud and Jung. The author is convinced that the freudism development has been of great value. He says, for example: "It may doubtless be demonstrated that the principle of sexual etiology has been misapplied in specific instances, and even that a psychotherapy based upon a sexual foundation may fail in practice; but this cannot destroy the usefulness of the generalization in its broader aspects, nor can it be denied that with all its vagaries and overaccentuation at the hands of certain of its more enthusiastic and uncritical adherents a distinct step in progress has been made by the analytic school." Like many authors who have given special study to this subject, Dr. Taylor feels that psychotherapy must remain in the hands of the medical profession if it is to advance along rational lines. The physician must concern himself with the mind of the patient and the relation of mind to physical diseases.

ARABIAN MEDICINE AND ITS INFLUENCE ON THE MIDDLE AGES. By Dr. Donald Campbell. Volumes I and II. Cloth. Price, $8 per set. Pp. 442. New York: E. P. Dutton & Co., 1926.

The school in the history of medicine headed by Dr. Charles Singer has given us during recent years many valuable contributions. Not the least of these is the present work on *Arabian medicine, fitting it into its proper place as the* promoter of science after the decline of the Greco-Roman civilization. The author was for some time connected with *the British forces in the Far East,* and therefore approaches the work with intimate understanding and sympathy. He points out that the Arabians raised the medical profession from a menial position to that of a learned profession; that they were the first to introduce systematically arranged illustrations in their medical writings; that they introduced the idea of legal control of qualifying examinations for admission to medicine, and that they aided the dissemination of Greek culture into a wider field. The two volumes in which these facts are elaborated include records of all the better known Arabian contributors, numerous quotations from Arabic writings, and a complete bibliography of the Latin versions of the contributions of Galen to medicine. For any one interested in medical history or in the special phases of it here concerned, these volumes are especially desirable.

PSYCHOTHERAPIE: Ein Lehrbuch für Studierende und Aerzte. Von Dr. Max Isserlin, Professor an der Universität in München. Paper. Price, 9 marks. Pp. 205. Berlin: Julius Springer, 1926.

Isserlin's contribution to the great, world-wide controversy as to Freud's actual contribution to psychotherapy is a complete outline of the subject based on the courses given since 1910 in the University of Munich. The author believes that the freudian contribution has been an actual one, but that it must not be permitted to depart too far from the basic facts of medicine. The book is divided into sections on suggestion, on mental hygiene, on analytic psychotherapy, and on psychotherapy as applied for the alleviation of special conditionals. The concluding chapter deals with the abnormal constitution and the value of psychotherapy in organic disturbances.

LACTOBACILLUS ACIDOPHILUS. By Nicholas Kopeloff, Ph.D., Associate in Bacteriology, Psychiatric Institute, Ward's Island, N. Y. Cloth. Price, $5. Pp. 211, with illustrations. Baltimore: Williams and Wilkins Company, 1926.

The vicissitudes of sour milk therapy since the time when Metchnikoff first pronounced it a prime factor for the promotion of longevity have been many. Physicians have seen the passing of *Bacillus bulgaricus* into a well defined position not nearly so important as that originally accorded to it. They have also seen the coming on the scene of the acidophilus organism, and read numerous reports that brought its use almost to the status of a panacea. The book by Kopeloff is a well written account of the history of the subject, a review of investigations in the field, and a presentation of original studies by the author and his colleagues. It is, of course, concluded that such therapy has limited uses. *Bacillus acidophilus* is not a panacea, and it will not necessarily prolong life. It has, however, established virtues in the treatment of constipation, diarrhea, and some other less common intestinal disorders. It is the belief of the author that most of the commercial preparations on the market are worthless, and that none of them compare in value with viable milk cultures. The author also points out that lactose feeding is valuable, but that this sugar alone cannot replace acidophilus milk.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

The Dispensatory of the United States of America: *Thoroughly revised, largely rewritten and based upon the tenth revision of the United States Pharmacopœia, National Formulary, fifth edition, and the British Pharmacopœia 1914.* By Horatio C. Wood, Jr., M.D., Professor of Pharmacology and Therapeutics in the University of Pennsylvania; Charles H. LaWall, Ph.M., D.Sc., Phar.D., Profecssor of Theory and Practice of Pharmacy in the Philadelphia College of Pharmacy and Science; Heber W. Youngken, Ph.M., Ph.D., Professor of Botany, Pharmacognosy and Materia Medica in the Massachusetts College of Pharmacy; John F. Anderson, M.D., Director of the Research and Biological Laboratories of E. R. Squibb and Son, and Ivor Griffith, Ph.M., Assistant Professor in Pharmacy in the Philadelphia College of Pharmacy and Science. *Twenty-first edition. Cloth. Price, $15. Pp.* 1792. Philadelphia: J. B. Lippincott Company, 1926.

The pharmaceutical *vade mecum.*

Die Biologie der Person. Ein Handbuch der allgemeinen und speziellen Konstitutionslehre. Herausgegeben von Dr. Th. Brugsch, und Prof. Dr. F. H. Lewy. Lieferung 2—Band 1. Spezielle Vererbungslehre. Von Priv. Doz. Dr. G. Just. Individualanatomie. Von Prof. Dr. W. Lubosch. Individualpathologie und Krankheitslehre. Von Dr. G. Mittasch. Person und Infekt. Von Dr. F. Schiff. Paper. Price, 21 marks. Pp. 323-748, with 126 illustrations. Berlin: Urban & Schwarzenberg, *1926.*

More parts to another German compilation of knowledge—this one on anatomy and pathology.

Electrothermic Methods (Desiccation and Coagulation) in the Treatment of Neoplastic Diseases: Designed as a Practical Handbook of Surgical Electrotherapy for the Use of Practitioners and Students. By J. Douglas Morgan, B.A., M.D., Instructor in Radiology, University of Pennsylvania Graduate School of Medicine, Philadelphia. Cloth. Price, $2.50. Pp. 172, with 36 illustrations. Philadelphia: F. A. Davis Company, 1926.

Outline of technic with bibliography from which the name of J. F. Percy is strangely absent.

The Clinical Examination of the Nervous System. By G. H. Monrad-Krohn, M.D., M.R.C.P., M.R.C.S., Professor of Medicine in the Royal Frederick University, Oslo. With a Foreword by T. Grainger Stewart, M.D., F.R.C.P., Physician to the National Hospital for the Paralysed and Epileptic, Queen Square. Third edition. Cloth. Price, $2.50. Pp. 201, *with 52 illustrations. New York: Paul B. Hoeber, Inc.,* 1926.

Latest edition of a competent popular guide to methods of neurologic examination.

Diagnostik und Therapie der Kinderkrankheiten, mit speziellen Arzneiverordnungen für das Kindesalter: Ein Wegweiser für den praktischen Arzt. Von Prof. Dr. F. Lust, Direktor des Kinderkrankenhauses (Bad. Landesanstalt für Sauglings- und Kleinkinderfürsorge) in Karlsruhe. Fourth edition. Paper. Price, 10.50 marks. Pp. 508. Berlin: Urban & Schwarzenberg, *1926.*

New edition of popular German textbook, the last previous one in 1923.

Die Chirurgie. *Eine zusammenfassende Darstellung der allgemeinen* und der speziellen Chirurgie. Herausgegeben von Prof. Dr. M. Kirschner und Prof. Dr. O. Nordmann. Lieferung 10. Band V. Die Chirurgie des Magens und Zwolffingerdarms. Von Prof. D. N. Guleke, Prof. Dr. H. Nieden, und Prof. Dr. H. Smidt. Paper. Price, 21 marks. Pp. 361-680, with 101 illustrations. Berlin: Urban & Schwarzenberg, *1926.*

The surgery of the stomach and duodenum in monograph form.

Die Technik der Blutgruppenuntersuchung: Für Kliniker und Gerichtsärzte, nebst Berucksichtigung ihrer Anwendung in der Anthropologie und der Vererbungs- und Konstitutionsforschung. *Von Dr.* Fritz Schiff, Abteilungsdirektor am stadtischen Krankenhaus im Friedrichshain-Berlin. Paper. Price, 6 marks. *Pp. 66, with 28 illustrations.* Berlin: Julius Springer, 1926.

Technic of studies in iso-agglutination from medicolegal point of view.

Die Biologie der Person. Ein Handbuch der allgemeinen und speziellen Konstitutionslehre. Herausgegeben von Prof. Dr. Th. Brugsch, und Prof. Dr. F. H. Lewy. Lieferung 3—Band 1. Konstitution und Rasse. Von Dr. V. Lebzelter. Die Lebensdauer des Menschen. Von Dr. H. Ullmann. Paper. Price, *19.80* marks. *Pp. 749-1051,* with 10 illustrations. Berlin: Urban & Schwarzenberg, 1926.

This part on race type and the length of life.

Reports of Eye Clinics and Slit-Lamp Clinics. By L. Webster Fox, M.D., Professor of Ophthalmology, Graduate School of Medicine, University of Pennsylvania. Paper. Pp. 46. Philadelphia, *1926.*

Pathology and Treatment of the Inflammatory Diseases of the Nasal Accessory Sinuses. In 2 volumes. By Professor Dr. M. Hajek, Chief of the Laryngo-Rhino-Otological Clinic, University of Vienna. Translated and edited *by* Joseph D. Heitger, A.B., M.D., and French K. Hansel, M.D., M.S. Fifth edition. Cloth. Price. $17. Pp. 702, with illustrations. St. Louis: C. V Mosby Company, 1926.

A standard reference for specialists in otolaryngology.

Epilepsy: A Functional Mental Illness, Its Treatment. By R. G. Rows, M.D., Pathologist and Medical Officer, County Mental Hospital, Prestwich, Manchester, and W. E. Bond, M.R.C.S., L.R.C.P., a Senior Medical Officer to the Ministry of Pensions. Cloth. Price, $3. Pp. 138. *New York: Paul B. Hoeber, Inc., 1926.*

A clinical treatment of epilepsy on the basis that it is an emotional response.

Laws (Abstract) and Board Rulings: Regulating the Practice of Medicine in the United States and Brief Statements Regarding Medical Registration *Abroad.* Revised to June 1, *1926.* Thirty-seventh edition. Paper. Price, 80 cents. Pp. 254. Chicago: The American Medical Association, 1926.

Latest edition of a collection of indispensable information *nowhere else available.*

Tables annuelles de constantes données numériques de chimie, de physique et de tecnologie. Publiées sous le patronage de l'Union de Chimie pure et appliquée par le Comité international *nommé* par le VII Congrés de Chimie appliquée. Volume V, deuxième partie—années 1917-1918-1919-1920-1921-1922. Cloth. Pp. 1934. Paris: Gauthier-Villars & Cie, *1926.*

Tables and constants of atomic properties and electrons.

Handbuch der speziellen pathologischen Anatomie und Histologie. Herausgegeben von F. Henke, und O. Lubarsch. Achter Band—Drüsen mit innerer Sekretion. Von W. Berblinger; A. Dietrich; G. Herxheimer; E. J. Kraus; A. Schmincke; H. Siegmund, und C. *Wegelin.* Paper. Price, 165 marks. Pp. 1147, with 358 illustrations. Berlin: Julius Springer, 1926.

Pathology of the glands of internal secretion.

Surgery of Childhood. By John Fraser, M.C., M.D., Ch.M., Regius Professor of Clinical Surgery in the University of Edinburgh. Two volumes. Cloth. Price, $14 per set. Pp. 1152, with 598 illustrations. New York: William Wood and Company, 1926.

A competent survey of the special problems associated with surgery as applied to small bodies and their deficiencies.

The Medical, Social, Economic, Moral and Religious Aspects of Birth Control. By S. Adolphus Knopf, M.D., Major Med. Off. Res. Corps (Aux.), U. S. Army. Third edition Paper. Price, 25 cents Pp. 66, with illustrations. New York, *1926.*

Discussion and much argument for conditions more ideal than possible of practical realization.

Hints on Equipment and Health: For Intending Residents in the Tropics. By *J.* Balfour Kirk, M.B., Ch.B., D.P.H., Medical Officer of Health, Fort Louis, Mauritius. Cloth. Price, *3/6 net. Pp. 120.* London: Baillière, Tindall and Cox, 1926.

The information here contained might make the *tropics* more than endurable.

Laboratory Manual in General Microbiology. Prepared by the Laboratory of Bacteriology and Hygiene, *Michigan* State College. Third edition. Cloth. Price, $3.50. Pp. 472, with illustrations. New York: John Wiley & Sons, Inc., 1926.

The second edition, 1921, has been a popular laboratory guide.

Cavernous Sinus Thrombophlebitis and Allied Septic and Traumatic Lesions of the Basal Venous Sinuses: A Clinical Study of Blood Stream Infection. By Wells P. Eagleton, M.D., Medical Director, Newark Eye and Ear Infirmary, Newark, N. J. Cloth. *Price,* $4.50. Pp. 196. New York: Macmillan Company, 1926.

Monographic consideration based on good case reports.

Lehrbuch der topographischen Anatomie mit besonderer Berücksichtigung ihrer Anwendung. Von John Blumberg, Dozent und Vorstand des *Chirurgisch-Anatomischen* Institutes an der Universität Dorpat (Tartu) in Estland. Paper. Price, 21 marks. Pp. 486, with *152 illustrations.* Berlin: Urban & Schwarzenberg 1926.

Beautifully illustrated guide to surgical landmarks.

Injuries of the Wrist: A Radiological Study. By Dr. Étienne Destot. Translated by F. R. B. Atkinson, M.D.C.M. Cloth. Price, $6. Pp. 176, with 87 illustrations. New York: Paul B. *Hoeber,* Inc., 1926.

First English translation of a French classic radiologic study of the wrist.

Anémie pernicieuse. La cholesterine en bio-pathologie. *Par* Dr. M.-T. de Gerin, de la *Faculté* de *médecine* de Paris. Paper. Pp. 42, with illustrations. Paris: E. le François, 1926.

The author seems to think that cholesterin is the one important substance in cause and cure.

Medicolegal

Privilege and Testimony of Physician in Will Case

(In re Vaughn's Estate (Wash.), 242 Pac. R. 1094)

The Supreme Court of Washington, in affirming a decree sustaining a will which it was contended that the testator lacked the mental capacity to make, says that any definition of testamentary capacity is more or less arbitrary and subject to revision or modification as new combinations of fact arise. Again, it says that it was argued that error was committed in this case in allowing a physician, while testifying, to claim as privileged certain information acquired by him several years before while rendering professional services to the testator. The physician testified with more or less detail of his services at the time referred to, and especially with reference to the testator's mental condition. There was a question with reference to the bodily ailment of the testator that the physician preferred not to answer, and the court does not understand that counsel ultimately insisted on a direct answer to that specific question. However, it did appear that this physician, who saw and conversed with the testator on the day the will was executed, and with whom he was well acquainted, did testify in answer to questions on behalf of the contestant of the will as to what, if any, effect the physical condition of the testator several years before, as found by the physician, had on the mental condition of the testator at the date of the will. This was the ultimate and effective inquiry, and this court thinks there was no error in this regard.

Releases Based on Physicians' Mistakes in Prophecy

(Tucker v. Atchison, T. & S. F. Ry. Co. (Kan.), 243 Pac. R. 269)

The Supreme Court of Kansas says that, while the plaintiff was in the employ of the defendant as a laborer, a skid broke and the end flew up, striking him in the jaw. He received treatment from the defendant's physicians, and within a month executed a release for $75. He continued to receive treatment from the defendant's physicians, and at the end of four months executed another release for an additional amount of $275. Subsequently he brought this action to set aside the second release on the ground of mutual mistake and to recover damages for his personal injuries. He obtained a verdict for $2,500, and entered a remittitur of $350—the amount already received; but judgment on the verdict is reversed by the supreme court, with directions to enter judgment for the defendant, because the court holds that, to justify rescinding a contract or release on the ground of mutual mistake, such mistake must be as to a past or present fact material to the contract, and not a mere mistake in prophecy, opinion or belief relative to an uncertain event, such as probable developments from and permanence of a known injury.

The plaintiff's principal disability at the time of the trial, more than two years after he was injured, was ankylosis or limitation of motion of the lower jaw, difficulty in speaking intelligently, and enlargement and tenderness of the jaw. This condition existed ever since the injury. Whether or not the jaw was broken was never ascertained. Some of the physicians thought it was, others not. The plaintiff said that he did not know which physician was right. He did not know at the time he signed the release or at the time of the trial; from which it clearly appeared that he was not deceived; that he did not sign the release in the belief that his jaw was not broken. No new injuries had developed, nor had the result of the injuries already known been increased or augmented from the time of the second release to the date of the trial. Moreover, the plaintiff admitted that he read this release and knew its contents when he signed it. He apparently placed on one of the physicians most of the responsibility for the belief that his injuries were only temporary. He testified that that physician never did say exactly how long it would be before he would be able to go back to his work, but said all the time, "It was no permanent injury; it would just be a small time and I would be over it," etc. But the supreme court finds it difficult to construe the statements attributed to that physician as more than an expression of opinion. They were not statements of an existing fact, and, when considered in connection with all the other circumstances, did not furnish sufficient basis on which to set aside the contract on the ground of mutual mistake.

No contention was made that the opinion of that physician or the other physicians was given in bad faith, or that it was for the purpose of inducing the plaintiff to make a settlement. If a mistake was made, it was a mistake of prophecy—not of a past or existing fact. If the physician made the statements attributed to him and if the plaintiff believed them, still they were not statements of fact which would sustain a cause of action for rescission. The future duration of the plaintiff's disability was a matter of conjecture, of opinion, of belief, and not of fact.

Penalty Recoverable by Summary Proceeding

(State Board of Medical Examiners v. Roche (N. J.), 132 Atl. R. 86)

The Supreme Court of New Jersey, in dismissing the defendant's appeal from a judgment for the plaintiff, says that, under the amendment of 1921 to the act of 1894, the defendant was prosecuted for the statutory penalty for practicing medicine without the required license, and was convicted in the district court. She appealed to this court apparently on the theory that the proceeding in question was governed by the provisions of the district court act relating to appeals and judgments in that court. On the merits, if they were properly before the supreme court, the judgment would have to be affirmed. The only point made was that a trial by jury was denied after having been demanded. But this point was settled, so far as relates to the supreme court, in *State Board of Medical Examiners* v. *Buettel*, 131 Atl. 89. It was intimated that the amendment of 1921, which for the first time in precise words prescribed that the trial should be without a jury, is unconstitutional as improperly excluding a jury trial; but this court thinks that the contrary is well settled. The action is a special statutory proceeding, committed to a statutory tribunal relating to a statutory offense which was no crime at common law. The matter, however, was not properly before this court, as the judgment in this proceeding was reviewable only by writ of certiorari and not by appeal tantamount to a writ of error. The legislature in 1921, by what was called in the Buettel case a "clear and unequivocal mandate," directed that the trial be without a jury. If the suit had therefore been a civil suit, subject to the jury features of the district court act, the legislature evidently meant it to be thereafter a summary proceeding; for not only is it prescribed that "the court shall proceed in a summary manner without a jury . . . without the filing of any pleadings," but the statutory form of conviction states that "C. D. defendant was . . . convicted . . . in a summary proceding . . . upon a complaint," etc. The case is thus brought within the settled rule that a proceeding in an inferior tribunal and not according to the course of the common law is reviewable exclusively by certiorari, and the practical reason for insisting on its application has been stated to be that, "If certiorari be the only proper method of review, it follows that frivolous and nonmeritorious attempts to remove the record, which appeal, as a matter of right, would facilitate, will be cut off by the timely refusal of an allocatur in certiorari."

The pertinence of this comment was illustrated by the fact that at the instant term there were five appeals of this precise character before this branch of the court.

Evidence of Negligence and of Clips Causing Trouble

(Fowler v. Scheldrup (Minn.), 207 N. W. R. 177)

The Supreme Court of Minnesota, in affirming an order that set aside a verdict apparently directed for the defendant and that granted a new trial, says that this court was asked to determine whether there was evidence to take the case to the jury as to negligence of the defendant and as to whether the plaintiff's trouble was a proximate result thereof. In March, 1920, the defendant, a surgeon, performed an operation on the plaintiff, the following being among the things which he conceded that he did: curettement of the uterus, application of phenol (carbolic acid) and iodine to the inside of the uterus, opening of the abdomen for other necessary purposes, elevation of the uterus to normal position, elimination of adhesions between the lower part of the large bowel and the uterus, and removal of the appendix and an ovarian tumor. The plaintiff was released from the hospital in April. Three or four weeks later she had a hemorrhage, and was told by the defendant that in the operation he had done everything necessary to prevent such hemorrhages, and could not understand why she should have them. The medicines which he prescribed helped, but hemorrhages continued, occurring about every three weeks and lasting a week or ten days. The trouble remained. The plaintiff continued to use the medicine under the defendant's direction until the fall of 1923. In September of that year she discovered that two metal surgical clips were attached in the cervix, or neck, of the uterus. With this discovery she called at the defendant's office, but he was not there. She then went to another physician and surgeon, who made a vaginal examination and found the clips at the place stated. They were dark, and showed evidence of considerable corrosion. At the point of insertion of the clips there was an erosion of the tissues. The evidence showed that such erosion produced a certain amount of irritation and breaking down of the tissues, which tended to cause bleeding. A week later the plaintiff gave the clips to the defendant, and told him that she thought she had found the trouble which had caused the hemorrhages, and he said, "Oh, no; they would do no harm." After the clips were removed the plaintiff had no hemorrhages. The defendant denied that he used the clips. He denied many of the plaintiff's statements, and said that in his opinion the presence of the clips would not have caused the hemorrhages.

The evidence was sufficient to justify the jury in finding that the defendant inserted the clips and failed to remove them. They were metal. They remained with the plaintiff for more than three years. She suffered. The facts made a prima facie case of failure to exercise care in the removal of the clips after they had served their purpose. This case did not require a finding of lack of skill; merely a want of care. The defendant, as a surgeon, did not attempt to justify the retention of the clips in service for such a length of time. He denied responsibility for their presence. If the jury should find that he was responsible for their presence, the evidence would warrant a finding that they were the proximate cause of the plaintiff's trouble. The evidence was weak as to the hemorrhages resulting from their presence. The fact that the trouble ceased on the removal of the clips was important and persuasive. This court thinks that, under all the circumstances, the evidence was sufficient. The defendant gave his opinion that the presence of the clips would not cause the hemorrhages. But this was a case in which the expert opinion of the defendant was not necessarily controlling. It was for the consideration of the jury.

Death Occasioned by a Fortuitous Event

(Frandila v. Department of Labor and Industries (Wash.), 243 Pac. R. 5)

The Supreme Court of Washington, in affirming a judgment which reversed the action of the department of labor and industries in disallowing the claimant compensation for the death of her husband, says that, while assisting in digging a ditch for a sewer and chopping on a root at the bottom of the ditch, he collapsed and died in about fifteen minutes. The testimony established that the man, who was 60 years of age, was suffering from hardening of the arteries and died from either a rupture of a blood vessel or embolism. The department contended that the death was not occasioned by a fortuitous event, in that there was no unusual strain or exertion, but was occasioned by the hardening of the arteries, a slow, progressive disease which, when sufficiently advanced, produces death under ordinary exertion. The state statute, which provides for compensation where death results from an injury, defines "injury" as referring "only to an injury resulting from some fortuitous event as distinguished from the contraction of disease." The question then was whether the testimony in this case showed a fortuitous event, and the court holds that it did. It was plain from the evidence that the hardened arteries, coupled with overexercise in the course of employment, caused either the hemorrhage or the embolism. The chopping of the root was a definite and particular occurrence which was the contributing, proximate cause of the death.

The question of whether an injury has been the result of an accident or an accident arising out of the employment, which are narrower terms than fortuitous event, has been considered by many courts, and the result of these decisions seems to be that an accident exists when a man undertaking work is unable to withstand the exertion required to do it, whatever may be the degree of exertion used or the condition of the workman's health. Reference to the cases from this court in which the question of fortuitous event has been considered shows that those decisions are in harmony with the ones referred to from other jurisdictions.

The contributing and proximate cause of this workman's death was an unlooked for mishap and untoward event not expected or designed. The exertion necessary to cut the root was the extra weight thrown into the scale with his physical condition which occasioned the injury. It is not necessary in order for a person to recover compensation as an injured workman that he must have been in perfect health at the time he received the injury. That is not the intent of the statute and it cannot reasonably be given any such interpretation. Where a workman, not in perfect health, during the course of his employment, makes an extra exertion, which, in addition to his infirmity, causes an injury, such injury is the fortuitous event and brings him within the operation of the compensation act.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Colorado Springs, Sept. 13-18. Dr. Luther C. Peter, N. E. Cor. Chestnut and 20th Streets, Philadelphia, Secretary.
American Association for Thoracic Surgery, Montreal, Canada, Sept. 30. Dr. Ethan Flagg Butler, Robert Packer Hospital, Sayre, Pa., Secretary.
American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Chicago, Sept. 20-22. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.
American Association of Railway Surgeons, Chicago, Nov. 3-5. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.
American Climatological and Clinical Association, Philadelphia, Sept. 27-28. Dr. A. K. Stone, Auburn Street, Framingham Center, Massachusetts, Secretary.
American College of Physical Therapy, Chicago, Oct. 18-23. Dr. R. W. Fouts, City National Bank Building, Omaha, Secretary.
American College of Surgeons, Montreal, Canada, Oct. 25-29. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
American Public Health Association, Buffalo, Oct. 11-14. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.
Association of American Medical Colleges, Cleveland, Ohio, Oct. 25-27. Dr. F. C. Zapffe, 25 East Washington Street, Chicago, Secretary.
Association of Military Surgeons of the United States, Philadelphia, Oct. 14-16. Col. J. R. Kean, U. S. A., Ret., Army Medical Museum, Washington, D. C., Secretary.
Central States Pediatric Society, St. Louis, Oct. 22-23. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.
Colorado State Medical Society, Colorado Springs, Sept. 21-23. Dr. F. B Stephenson, 460 Metropolitan Building, Denver, Secretary.
Delaware State Medical Society, Dover, Oct. 12-13. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.
Indiana State Medical Association, West Baden, Sept. 22-24. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.
Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 18-22. Dr. W. B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.
Kentucky State Medical Association, Frankfort, Sept. 20-23. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
Michigan State Medical Society, Lansing, Sept. 14-17. Dr. F. C. Warnshuis, Grand Rapids National Bank Bldg., Grand Rapids, Sec'y.
Missouri Valley, Medical Society of the, Council Bluffs-Omaha, Sept. 15-17. Dr. Charles Wood Fassett, 115 East 31st St., Kansas City, Mo., Sec'y.
National Tuberculosis Association, Washington, D. C., Oct. 4-7. Dr. George M. Kober, 1819 Eye Street, N. W., Washington, D. C., Sec'y.
Nevada State Medical Association, Reno, Sept. 24-25. Dr. H. J. Brown, Gray-Reid Building, Reno, Secretary.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 11-14. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.
Southwest, Medical Association of the, Kansas City, Mo., Oct. 11-14. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.
Vermont State Medical Society, Burlington, Oct. 14-15. Dr. W. G. Ricker, 29 Main Street, St. Johnsbury, Secretary.
Virginia, Medical Society of, Norfolk, Oct. 12-15. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.
Western Surgical Association, Duluth, Minn., Oct. 14-16. Dr. H. P. Ritchie, Lowry Building, St. Paul, Secretary.
Wisconsin, State Medical Society of, Madison, Sept. 15-17. Mr. J. G. Crownhart, 153 Oneida Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in North America for a period of three days Foreign journals prior to 1921 and domestic journals prior to 1923 are not available. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Chicago

9:489 568 (July) 1926

Angioscotometry. J. N. Evans, New York —p 489.
Injuries to Conjunctiva by Spines from Common Burdock. C. E. Munk, Kendallville, Ind —p 507.
Traumatic Retinal Detachment Hypertension: Part of Visual Field Retained H. Beard, Chicago.—p. 510.
Metastatic Carcinoma of Choroid: Two Cases; Four Eyes C. A. Clapp, Baltimore —p 513.
Enucleation of Eyeball Under Local Anesthesia. F. H. Rodin, San Francisco —p 517
New Vessel Formation in Vitreous H. W. Scarlett, Philadelphia.—p 521.
Ophthalmic History: Bowman, Donders and Von Graefe V. J. Schwartz, Minneapolis —p 524
Traumatic Iridodialysis: Spontaneous Recovery. A. Duane, New York. —p 531.
Massive Exudative Retinitis and Angiomatosis Retinae. D Alperin, New York —p 532
Luminal Poisoning with Conjunctival Residue. J. H. Roth, Kankakee, Ill —p 533.

Annals of Clinical Medicine, Baltimore

4:851-986 (May) 1926

Training and Equipment of Internist. A. Stengel, Philadelphia —p. 851.
Obiter Scripta Medica C F. Martin, Montreal —p. 861.
*Roentgen Ray Examinations of Respiratory Cavities with Lipiodol. J. Forestier, Aix les Bains, France —p 869.
Physiologic Control. Protoplasmic Basis and Development. C. M. Child, Chicago —p 884
Medical Aspects of Hyperthyroid Conditions O. P. Kimball, Cleveland. —p 900
Diagnostic Pneumothorax. J J Singer, St. Louis —p. 907.
Graded Extrapleural Thoracoplasty C A. Hedblom, Chicago —p. 921.
*Treatment of Abscess of Lung E A. Graham, St. Louis —p. 926.
*Treatment of Thoracic Aneurysm. W. W. Babcock, Philadelphia —p. 933.
Systemic Expressions of Dental Infections. W. A. Price, Cleveland —p 943.

Use of Iodized Oil in Chest Roentgenography.—Forestier has found the injection of lipiodol into the bronchial tree a very harmless mode of examination for diagnostic purposes. It seems to have a therapeutic action in cases of chronic lung suppuration.

Abscess of Lung Associated with Tumor.—In a series of 178 cases of pulmonary suppuration, referred to by Graham, nineteen cases, or 10 7 per cent, have been associated with malignant tumors of the lung.

Treatment of Thoracic Aneurysm.—In cases of thoracic aneurysm, Babcock speeds up the blood current by making a carotid-jugular anastomosis. In the case cited, the distal ends of the internal jugular and common carotid were ligated, and the proximal ends anastomosed end to end. The blood from the right common carotid was therefore immediately returned to the heart. For two or three days after the operation, the patient was in a serious condition from the pulmonary congestion; then a marked fall in blood pressure occurred, with great improvement and relief from pain. Evidence of cerebral degeneration did not develop, and the venous circulation in the right side of the head and neck was much improved. There was no evidence that the blood was driven into the descending vena cava and the liver.

Archives of Neurology and Psychiatry, Chicago

16:1-130 (July) 1926

Central Visual System I. Anatomic Projection of Retinal Quadrants on Striate Cortex of Rabbit. T. J. Putnam and I K. Putnam, Boston. —p 1.
*Neuromyelo Encephalitis During and Following Epidemic of Hiccup: Diverse Localization of Streptococci. E. C. Rosenow, Rochester, Minn. —p 21.
*General Paralysis Treated with Tryparsamide. G. B Hassin and P. Bassoe, Chicago —p 37.
*Blood Calcium and Phosphorus in Personality Disorders: Effect of Ultraviolet Irradiation. G. W. Henry and W. W. Ebeling, White Plains, N. Y.—p. 48.
*Action of Bulbocapnine in Paralysis Agitans and Tremor of Paralysis Agitans Type. H. DeJong, Amsterdam, and W. Herman, Boston. —p. 55.
*Loss of Weight: Importance as Early Symptom in General Paralysis. H. A. Bunker, Jr, New York —p 63.
Paralysis of Oculopupillary Sympathetic Fibers and Ophthalmic Division of Trigeminal Nerve, Preceded by Ophthalmic Herpes Zoster: Case. C S. Potts, Philadelphia.—p. 71.
Uncinate Syndrome. W. G. Spiller, Philadelphia —p. 73.
*Bilateral Brachial Plexus Palsy. P. Lewin and H. Arkin, Chicago —p 75.

Hiccup Causes Neuro-Encephalitis.—Results of experiments in cases of nausea and vomiting, and neuritis and allied conditions that developed during and following an epidemic of hiccup are reported by Rosenow. With few exceptions, the symptoms in the animals paralleled in important respects those in the patients studied. While tremors and spasms of muscles, chiefly of jaws, ears and neck, occurred in nine of twenty-one rabbits injected intracerebrally, spasms of the diaphragm occurred in only three. Two of these were injected with the streptococcus from two patients who had transient hiccup, and the third with the streptococcus from a patient who developed nausea and vomiting in a family in which one member had had a severe attack of hiccup a short time previously. Four dogs, injected with the material from two patients who were severely nauseated and vomited, developed anorexia and vomited repeatedly. Only one rabbit of thirty-two injected with material from four patients in whom lethargy was absent became lethargic, while three of twelve rabbits injected with material from a patient who had lethargy manifested this symptom. Evidence of neuritis was present in five cases studied; correspondingly, hemorrhagic lesions of nerves occurred in eight of twenty-one rabbits injected intracerebrally and in ten of seventeen injected intravenously. Parallelism between patients and animals is further shown by the fact that, of sixteen rabbits injected intracerebrally with the streptococcus from three cases in which there was no evidence of myelitis, only one had gross hemorrhages of the cord or medulla, while of twenty-two injected with material from two patients who had undoubted symptoms of myelitis, nine had gross hemorrhages in the cord. Moreover, of seventy-three rabbits injected intracerebrally with material from twenty-one cases of epidemic hiccup in which search for hemorrhages in nerves and cord was made, only two revealed gross hemorrhages of peripheral nerves, four of nerve roots and six of the spinal cord. In a few instances, lesions containing the streptococcus were found in the stomach or colon following intracerebral inoculation, especially of strains injected after one or two animal passages; this was considered in harmony with the fact that gastro-intestinal symptoms were not uncommon in these epidemics.

General Paralysis Treated with Tryparsamide.—In a case of general paralysis of the insane intensively treated by Hassin and Bassoe with neo-arsphenamine and tryparsamide, marked improvement was shown both serologically and clinically. The inflammatory, mesodermal phenomena were found to be milder than in an average case of general paralysis; they were thus influenced by the treatment. The ectodermal elements, ganglion and glia cells, were not affected by the treatment; neither did the treatment effect the disappearance of the spirochetes.

Blood Calcium and Phosphorus in Personality Disorders.—Calcium determinations were made by Henry and Ebeling on specimens from eighty-eight persons, eleven of whom presented no personality disorder. Phosphorus determinations were made on specimens from sixty-eight persons, seven of whom presented no personality disorder. The calcium and phosphorus content of the blood in personality disorders was within normal limits. In manic states, there was a relative increase in the calcium and phosphorus content. In tense, agitated, depressed states there was a relative decrease in the calcium and phosphorus content. The calcium and phosphorus content in both acute and chronic dementia praecox was unchanged. In dementia praecox, the calcium content was lowest in the catatonic type. The calcium and phosphorus content of the blood in personality disorders was not affected by ultraviolet irradiation. There appears to be a rational basis for calcium and phosphorus therapy in tense, agitated, depressed states.

Bulbocapnine in Paralysis Agitans.—Four patients, of whom three showed the typical parkinsonian syndrome, and the fourth a tremor of the parkinsonian type but no other signs, were treated by DeJong and Herman with a group of drugs known to have a quieting action on the central nervous system. Of these four patients, two showed a striking amelioration of the tremor after bulbocapnine and two showed a questionable improvement. Two patients showed a striking improvement after scopolamine, and two were entirely refractory to it. All four were refractory to atropine and phenobarbital. Morphine was administered to only one patient, who had responded particularly well to bulbocapnine and scopolamine. It was found to have no effect on the tremors. Judging from the four patients examined, bulbocapnine and scopolamine alone can be regarded as of real therapeutic value. Atropine and phenobarbital are of no value.

Loss of Weight in General Paralysis.—In a series of seventy-four male patients with general paralysis studied by Bunker, loss of weight, often well marked but also often very gradual, was essentially the earliest abnormality noted in twenty-two cases. In sixteen additional cases, loss of weight had definitely taken place but was a later manifestation. In twelve of these thirty-eight cases there was also a history of greatly increased appetite or bulimia, which usually developed some time after the onset of loss of weight, and which was in a few cases successful in counterbalancing to a considerable extent the preceding weight loss. In seven additional cases, in which no known loss of weight had taken place, there was likewise a definite history of bulimia.

Brachial Plexus Palsy.—Lewin and Arkin report a case of bilateral seventh cervical root palsy due to birth trauma. The injury evidently was in the roots of the plexus close to their points of exit from the spinal column, possibly within the spinal canal. The case was one of face presentation.

Archives of Otolaryngology, Chicago

4: 1-96 (July) 1926

*Displacement Irrigation of Nasal Sinuses. A. W. Proetz, St. Louis.—p. 1.
*Mixed Salivary Tumor in Tonsillar Region. A. O. Freedman, Montreal.—p. 14.
Medicolegal Importance of Microscopic Investigation of Temporal Bone. C. A. Heatly, Rochester, N. Y.—p. 28.
Otologic Complications of Basal Skull Fracture. C. F. Yerger, Chicago.—p. 35.
Aphonia: Three Cases. W. R. Watson, Philadelphia.—p. 46.
Comparison of Results Made with Two Types of Audiometer. H. Fletcher, New York.—p. 51.
Bilateral Jugular Resection for Bilateral Sigmoid Sinus Thrombosis (Otitic) Cases. H. Hastings, Los Angeles.—p. 58.
Intradural Complications of Aural and Nasal Origin: Survey of Recent Literature. W. P. Eagleton, Newark, N. J.—p. 69.

Displacement Irrigation of Nasal Sinuses.—A method is presented by Proetz for introducing fluids into the posterior series of accessory nasal sinuses without producing any trauma. By the use of appropriate solutions, it may be employed as a therapeutic agent. By the use of radiopaque oils, it may be used in combination with roentgen rays for diagnosis. It is not a substitute for surgical measures in those cases in which extensive permanent tissue changes have taken place, but may prevent such changes if instituted before they have occurred.

Mixed Tumor in Tonsil Region.—The tumor in Freedman's cases consisted of a mixed variety of tissues, myxomatous tissue, cartilage, osteoid and fat. The tumor was adherent to, but did not spring from, the periosteum of the inner surface of the inferior mandible near the angle. Freedman inclines to the view of Wood that this class of tumor arises from misplaced embryonic mesoblast and epiblast.

Boston Medical and Surgical Journal

195: 107-154 (July 15) 1926

Pediatrics in General Practice. J. Garland, Boston.—p. 107.
Urologic Causes of Abdominal Pain. J. D. Barney, Boston.—p. 111.
*Stethoscopes. W. R. Barss, W. F. Eade, Cambridge, Mass., and E. B. Fitzgerald, Boston.—p. 116.

Stethoscopes.—The results of this investigation of stethoscopes by Barss et al. show conclusively that a small air volume and large mouth area are conducive to greatest intensity. There are practical limits that must be placed on the volume and area, so that the exact dimensions for maximum intensity are yet to be determined.

195: 155-202 (July 22) 1926

*Is Ichthyol Useless? J. H. Blaisdell, Boston.—p. 155.
So-Called "Traumatic Neuroses." I. H. Coriat, Boston.—p. 160.
Cholecystography. F. S. Eveleth, Concord, N. H.—p. 165.
Trypanosomiasis: Relative Frequency in United States; Tryparsamide Therapy in Refractory Cases. K. M. Lewis, New York.—p. 167.

Value of Sulphonated Bitumen.—To determine the present status of sulphonated bitumen, N. F., as a remedial agent in the treatment of diseases of the skin, Blaisdell sent a questionnaire to 300 dermatologists. From the 169 replies received, it would appear that a large majority of the dermatologists of the country are using sulphonated bitumen, including the natural and the various synthetic substitutes, and are finding it useful and effective in a large number of skin diseases.

Canadian Medical Association Journal, Montreal

16: 745-876 (July) 1926

Mental Factor in Disease: Treatment by General Practitioner. C. Hunter, Winnipeg.—p. 745.
Biochemistry of Calcium. A. T. Cameron, Winnipeg.—p. 753.
Practical Application of Our Present Knowledge of Calcium Metabolism. A. T. Cameron, Winnipeg.—p. 759.
Some Forms of Anemia. F. G. Finley, Montreal.—p. 765.
Postoperative Pulmonary Complications. N. B. Gwyn, Toronto.—p. 772.
*Oral Administration of Glucose. R. D. Rudolf, Toronto.—p. 778.
Relation of Laboratory to Practice of Medicine. I. H. Erb, Toronto.—p. 781.
Upper Respiratory Infection in Relation to Pulmonary Disease. I. R. Smith, Toronto.—p. 785.
Neisser Infection in Male. H. C. Mersereau, Montreal.—p. 789.
What Anesthesia Records Show. J. A. Blezard, Edmonton, Alta.—p. 794.
Pyelitis in Infancy. H. P. Wright, Montreal.—p. 798.
*Results of Wassermann Tests. H. K. Detweiler, Toronto.—p. 800.
Synergistic Analgesia in Labor. W. J. Stevens, Ottawa.—p. 804.
*Bifurcate Ribs Cause of Deformity of Chest. M. W. Bloomberg, Montreal.—p. 807.
Saphenous Varix Simulating Femoral Hernia. G. G. Miller, Montreal.—p. 808.
Case of Thymoma. J. Miller, Kingston.—p. 810.

Glucose in Malnutrition.—In cases of malnutrition, acute or chronic, Rudolf finds glucose in large amounts by the mouth a valuable method of increasing the available energy and of aiding in the gain of weight, without putting any strain on the digestion or on the organs of excretion. It is scarcely necessary to add that it should not be used if there is any sugar in the urine, and it is well to watch the urine occasionally in patients who are taking it, although it will very seldom be found to give rise to any glycosuria.

Analysis of Wassermann Tests.—In the last ten years, more than 75,000 Wassermann tests have been made in the laboratories of the University of Toronto, in connection with the Toronto General Hospital. The incidence of syphilis in the wards of the hospital has dropped from 10.4 per cent in 1916 to 5.8 per cent in 1925. This drop has been coincident with, and may be due in part to, the development of an efficient outpatient clinic for syphilis. Only 1.1 per cent of the new-born infants in this hospital have a positive Wassermann reaction. Many syphilitic mothers bear nonsyphilitic children. In the special clinic for syphilis in the outpatient department of the Toronto General Hospital, more cases of primary syphilis are being detected now than in former years, but the figures for the new cases of tertiary syphilis remain so high that it becomes very evident that efforts for the education of the general public regarding the dangers of this disease must be redoubled if the victims of infection are to be attracted to the clinics at an early stage of the disease.

Bifurcate Ribs Cause Pigeon Breast.—In Bloomberg's case, two forked ribs produced a slight degree of pigeon breast, a deformity which, he says, is too often classified as solely the result of rickets.

Endocrinology, Los Angeles

10: 105-236 (March-April) 1926

*Neurologic and Endocrinologic Aspects of Ichthyosis, Chronic Indurative Eczema and Minor Forms of So-Called Trophic Changes in Dermal Tissues. F. M. Pottenger, Monrovia, Calif.—p. 105.

*Nondiabetic Glycosuria. H. J. John, Cleveland.—p. 115.
*Treatment of Senile Cataract with Thyroid Extract. W. J. Kerr, G. N. Hosford and H. C. Shepardson, San Francisco.—p. 126.
*Thyroid Apparatus. XXXIV. Rôle in Growth of Hypophysis. F. S. Hammett, Philadelphia.—p. 145.
*Regeneration of Thyroid. J. E. Else, H. M. Grow and C. W. Lemery, Portland, Ore.—p. 165.
Development and Nature of So-Called Toxic Adenomas. A. E. Hertzler, Halstead, Kan.—p. 175.
Goiter: Current Errors in Etiology and Treatment. I. Bram, Philadelphia.—p. 181.
Present Status of Problem on Tryptophan and Thyroid Gland. H. C. Chang, Chicago.—p. 188.
Standardization of Preparations of Ovarian Follicular Hormone. E. P. Bugbee and A. E. Simond, Detroit.—p. 191.
*Effect of Pituitary Preparations on Blood Sugar Curve and Basal Metabolism. K. M. Bowman and G. P. Grabfield, Boston.—p. 201.

Administration of Thyroid in Skin Diseases.—In five cases reported by Pottenger, the administration of desiccated thyroid, 1 Gm. daily, by mouth, and calcium chloride intravenously, 10 cc. of a 5 per cent solution, two or three times weekly, seemed to exert a favorable influence on the skin condition.

Nondiabetic Glycosuria.—Eight cases of nondiabetic glycosuria have been observed by John over periods ranging from two to eleven years, during which the patients have not had diabetes. It is said to be an innocent anomaly requiring no restriction of diet or other treatment.

Thyroid Extract in Senile Cataract.—Kerr et al. feel that better results may be expected in early senile cataract if iodides are used locally in the eye and thyroid substance, or the iodides, is given internally. Of twenty-eight patients so treated, ten showed improvement; ten were unchanged, and eight became worse. No particular type of cataract responded better to treatment than another. For the most part these were advanced cases, in which not much improvement could be expected. The incipient cases are said to offer better hope of cure.

Rôle of Thyroid in Growth of Hypophysis.—A report and an interpretation of the growth relation of the hypophysis to the thyroid apparatus is given by Hammett. The data lead to the following conclusions: 1. Thyroid deficiency conditions a consistent hypertrophy of the hypophysis in the male but not in the female. 2. The size and presumably the activity of the hypophysis is specifically related to the activity of the thyroid when this exceeds the usual limits in either direction. 3. This relationship is conditioned by gonadal incretory activity in the female but not in the male. 4. There is no specific growth relation between the hypophysis and the parathyroids.

Regeneration of Thyroid.—Partial thyroidectomy was performed by Else, Grow and Lemery on sixteen rabbits. It was found that, first, so long as there is a sufficient amount of thyroid gland left to supply the necessary thyroxin to the animal, there are no changes in the gland as the result of removal; second, that when a sufficient amount of thyroid substance is left so that stimulated activity on the part of the cells can supply enough thyroxin, regeneration will not take place and the increased cellular activity is shown only by an increase in colloid; third, that when there is not enough thyroid left to meet the needs of the animal, hyperplasia takes place, developing usually from the interacinar cells of Webber, but also from the intra-acinar cells, and in each case acini are formed.

Effect of Pituitary Preparations on Basal Metabolism.—The experiments made by Bowman and Grabfield confirm previous ones in regard to a slight rise in basal metabolic rate after the administration of pituitary preparations.

Florida Medical Association Journal, Jacksonville

12: 314-343 (June) 1926

Problems in Neurologic Surgery. C. E. Dowman, Atlanta, Ga.—p. 314.
Cholecystography. J. E. Boyd, Jacksonville.—p. 320.
Interpretation of Cholecystograms. W. M. Shaw, Jacksonville.—p. 323.
Cholecystography. L. W. Cunningham, Jacksonville.—p. 325.
Prostatic Hypertrophy. E. T. Sellers, Jacksonville.—p. 328.
Prostatectomy: Transacral and Caudal Anesthesia; Forty Consecutive Cases. R. B. McIver, Jacksonville.—p. 330.
Granular Calcium Lactophosphate Saccharated. G. R. Plummer, Key West.—p. 333.
Shall Pharmacists Serve Physicians? S. S. Dworkin, New York.—p. 334.

Iowa State Medical Society Journal, Des Moines

16: 299 356 (July) 1926

Liver and Its Cirrhoses. W. J. Mayo, Rochester, Minn.—p. 299.
Tularemia. J. W. Wallace, Des Moines.—p. 302.
Conquest of Cancer. E. H. Skinner, Kansas City, Mo.—p. 305.
Use of Gold in Tuberculosis. J. W. Kime, Fort Dodge.—p. 307.
Heart Disease Versus Tuberculosis: Mortality Statistics. T. J. Edmonds, Des Moines.—p. 308.
Burden on Medical Profession. S. Bailey, Mount Ayr.—p. 309.
Pernicious Anemia: Intravenous Use of Mercurochrome. H. S. Fist, Los Angeles.—p. 310.

Johns Hopkins Hospital Bulletin, Baltimore

39: 1-68 (July) 1926

*Treatment of Early Syphilis. I. Plan. J. E. Moore and A. Keidel, Baltimore.—p. 1.
*Id. II. Clinical Results. J. E. Moore and J. E. Kemp, Baltimore.—p. 16.
Id. III. Wassermann Reaction in Treated Cases. J. E. Moore and J. E. Kemp, Baltimore.—p. 36.
*Irradiated Orange Juice as Antirachitic Agent. H. L. Maslow, D. H. Shelling and B. Kramer, New York.—p. 56.

Treatment of Early Syphilis.—Moore and Keidel present a plan of treatment for early syphilis, the essential features of which are (*a*) that treatment shall be continuous, consisting of courses of arsphenamine alternating with courses of mercury by inunction (or of insoluble bismuth salts intramuscularly) plus potassium iodide; (*b*) that treatment shall be carried out under detailed serologic control; (*c*) that treatment shall be prolonged without intermission for one year after the blood and spinal fluid have become and have remained completely normal.

Results of Treatment of Syphilis.—Moore and Kemp report the clinical results of treatment in 402 patients with early syphilis, of whom forty-two had seronegative primary syphilis, sixty-one seropositive primary syphilis and 299 early secondary syphilis. Under a system of continuous treatment with alternating courses of arsphenamine and mercury, the probability of cure is in direct proportion to the duration and regularity of treatment. Only 10 per cent of those patients receiving eight or less doses of arsphenamine without mercury were cured; when two courses of arsphenamine, plus interim mercury, were given, 37 per cent were cured; after three courses, 56 per cent, and after four or more courses, 78.8 per cent of probable cures were obtained. The optimal amount of treatment for early syphilis with the plan advocated appears to be a full year of treatment after the serology of blood and spinal fluid has become and has remained negative, excepting only in seronegative primary syphilis, in which a three course treatment, lasting nine months, apparently produces satisfactory results. With the utmost cooperation on the part of the patient, and painstaking treatment and follow-up on the part of the physician, it appears possible to cure 100 per cent of patients with seronegative primary syphilis, but only 80 to 95 per cent of those with seropositive primary or early secondary syphilis. The tendency of inadequately treated syphilis to repeated relapses in the same patient is pointed out. Cardiovascular syphilis, especially aortitis, was the most common type of tertiary recurrence observed. The evidence of repeated routine spinal punctures in fifty-four patients permits the general statement that in early syphilis, if the spinal fluid is normal after six months' treatment, the patient will not develop clinical neurosyphilis or a subsequently positive spinal fluid unless a second dissemination of organisms (clinically manifest by recurrent secondary syphilis or a recurrent positive blood Wassermann reaction) occurs. Periodic reexaminations from physical and serologic standpoints are absolute essentials in the evaluation of treatment results.

Irradiated Orange Juice is Antirachitic Agent.—Experiments made by Maslow et al. demonstrate that (1) antirachitic properties can be imparted to orange juice by irradiation with the mercury vapor quartz lamp; (2) after feeding an irradiated orange juice to rachitic rats healing may be demonstrated as early as five days and is almost complete at the end of fifteen days.

Journal of Industrial Hygiene, Baltimore

8: 291-316 (July) 1926

Dust Inhalation by Hematite Miners. A. J. Cronin.—p. 291.
Prevention of Lead Poisoning in Industry. I. India-Rubber Industry. C. L. Klein, Breinsdown, England.—p. 296.
Determinations of Air Dustiness. S. H. Katz and G. W. Smith, Pittsburgh, and W. M. Myers, New Brunswick, N. J.—p. 300.
Effect of Turbulent Air Motion and Humidity on Stability of Dust, Fume and Smoke Clouds. P. Drinker, R. M. Thomson and J. L. Finn, Boston.—p. 307.

Kansas Medical Society Journal, Topeka

26: 207-242 (July) 1926

Rest in Treatment of Pulmonary Tuberculosis. H. C. Goodson, Colorado Springs.—p. 207.
Roentgenographic Evaluation of Pulmonary Tuberculosis Lesions. L. G. Allen, Kansas City.—p. 211.
*Scarlet Fever Epidemic at Lawrence, Kan. N. P. Sherwood and V. M. Auchard, Lawrence.—p. 215.
Foreign Bodies in Air and Food Passages. E. M. Seydell, Wichita.—p. 220.

Analysis of Scarlet Fever Epidemic.—An epidemic of scarlet fever occurring in a fraternity at Lawrence, Kan., is analyzed by Sherwood and Auchard. Apparently it was introduced by a case of tonsillitis contracted at Kansas City, Mo. Five of the twenty members of the fraternity developed scarlet fever and in addition six others mild tonsillitis or pharyngitis. The bacteriologic examinations show definite correlation between the presence of certain hemolytic streptococci and scarlet fever. *Streptococcus hemolyticus* in very large numbers was present in the throat and nasopharynx of one person during the fifth week from onset. The Dick test was done on fifteen contacts and on one who had apparently had the first case of scarlet fever in this epidemic and was apparently a carrier at the time of the test as well as afterward. The latter and four of the contacts gave positive and eleven negative reactions. None of the four contacts showing susceptibility by the skin test developed scarlet fever, although all of them were apparently exposed since all lived in the same house, ate together and in addition one studied with a student during the latter's incubation period and also, with another of the four, ate and slept in the same room with an apparent carrier for one week. Two of them did develop mild tonsillitis; the other two remained well. Of the eleven negative reactors, presumably immune, two developed scarlet fever. The skin reactions and blanching power of their serum was studied in a series of eleven individuals. There was complete agreement in eight and disagreement in three under the conditions of the test. The data suggest that the occurrence of positive skin reactions (Dick tests) in some of the subjects might be a phenomenon of hypersensitiveness. These results also suggest that if *Streptococcus scarlatinae* is the etiologic factor, a local mechanism in the throat and nasopharynx may be a factor in protecting some persons. There was no evidence that a bacteriophage was a factor in the defensive mechanism. Epidemiologic data indicate that the epidemic was essentially one of contact infection.

Kentucky Medical Journal, Bowling Green

24: 239-312 (June) 1926

Medical Management of Thyroid Dysfunction. W. F. Boggess, Louisville.—p. 241.
Management of Benign Prostatism. S. C. McCoy, Louisville.—p. 249.
Surgical Treatment of Troublesome Fractures of Long Bones. J. G. Gaither, Hopkinsville.—p. 253.
Relation of Infection of Nose and Throat to Diseases of Ear. J. D Heitger, Louisville.—p. 257.
Artificial Pneumothorax in Treatment of Pulmonary Disease. O. O. Miller, Louisville.—p. 261.
Operative Treatment of Chronic Infantile Paralysis. O. R. Miller, Louisville.—p. 266.
Diagnosis of Common Types of Skin Diseases. C. B. Wilmott, Louisville.—p. 268.
Obstetrics as Specialty. W. Gossett, Louisville.—p. 273.
Care and Delivery of Pregnant Woman in Her Home. L. T. Minish, Frankfort.—p. 277.
Family Doctor. B. C. Frazier, Louisville.—p. 290.
Lethargic Encephalitis. W. A. Gardner, Louisville.—p. 298.

Medical Journal and Record, New York

124: 61-128 (July 21) 1926

Failures and Success in Radiotherapy of Cancer. H. B. Philips, New York.—p. 61.
Acute Pericarditis. H. Elwyn, New York.—p. 67.
Gynecologic Operation in Insanity. E. McDonald, Philadelphia.—p. 71.
Case of Rat Bite Fever in New Jersey. M. de Fronzo, Newark, N. J. —p. 73.
Brain Diseases. J. W. Shuman, Los Angeles—p. 75.
Treatment of Gonorrheal Arthritis by Vasotomy. G. Greenberg, New York.—p. 76.
Abscess of Parotid Gland Following Acute Membranous Tonsillitis. A. Lobell, New York.—p. 79.
Preclinical Period and Prophylaxis of Diabetic Gangrene. H. S. Stark, New York.—p. 80.
Dislocation of Carpal Semilunar Bone: Eight Cases. E. D. McBride, Oklahoma City.—p. 82.
Hepatic Depressor Principle and Its Oral Administration in Hyptertension. H. R. Harrower, Glendale, Calif.—p. 83.
*Incidence of Pulmonary Complication Following Ether and Ethylene-Ether Anesthesia for Surgical Procedures in Upper Abdomen. J. S. Lundy, Rochester, Minn.—p. 87.
Clinical Effects on Gastro-Intestinal Tract Abnormalities of Portal Circulation. J. F. Montague, New York.—p. 93.
*Diagnostic Value of Anacidity. H. R. Hartman and W. W. Sager, Rochester, Minn.—p. 96.
Incidence and Prognosis of Hemorrhage as Complication of Gastroduodenal Ulcer. S. D. Manheim, New York.—p. 98.
Gallstones. E. L. Kellogg, New York.—p. 100.
Maimonides' Treatise on Poisons. L. J. Bragman, Syracuse.—p. 103.

Comparative Efficacy of Ethylene-Ether and Ether.—In order to establish a statistical basis for the comparison of ethylene-ether and ether in their efficacy and their effect on postoperative pulmonary complications and mortality, the results in two parallel series of 600 cases have been tabulated by Lundy. To make the two series analogous, each operation under ethylene-ether had a corresponding operation under ether, the site of the operation being similar, and the date and meteorologic conditions identical in each pair. The most favorable results in this series, from the point of view of anesthesia, postoperative pulmonary complications and mortality, were secured in the cases of gastric ulcer when ethylene-ether was used, and in the cases of cholecystitis without cholelithiasis when ether was given. The best results, from the point of view of anesthesia and the incidence of postoperative pneumonia in duodenal ulcer, followed the preoperative administration of morphine and atropine and ethylene-ether anesthesia. The net results, from the point of view of anesthesia, postoperative pulmonary complications and mortality, in cases of cholecystitis, whether or not there was an associated cholelithiasis, followed the use of ether without preliminary medication. Anesthesia was satisfactory in 85 per cent of cases on the average. The relative percentages in the ethylene-ether group and in the ether group varied in the different operations.

Diagnostic Value of Anacidity.—Hartman and Sager assert that the chances for and against the presence of pernicious anemia, gallbladder disease, or carcinoma, in a case of anacidity, are about even; the chances of either pernicious anemia or carcinoma being present are about one in three. Carcinoma is rare when free hydrochloric acid is present.

Missouri State Medical Association Journal, St. Louis

23: 237-284 (July) 1926

Infantile Paralysis Epidemic in Kansas City in 1925. R. L. Diveley, Kansas City.—p. 237.
Accidental Hemorrhage in Pregnancy. F. P. McNalley, St. Louis.—p. 238.
Postnatal Retrodisplacement of Uterus. W. Kerwin and J. Berman, St. Louis.—p. 241.
Endocervicitis: Prevention and Early Treatment by Cautery. F. B. Campbell, Kansas City.—p. 242.
Medical Testimony in Criminal Trials. G. W. Robinson, Kansas City. —p. 244.
Tests for Liver Function. W. A. Myers, Kansas City.—p. 250.
Ovarian Cyst Complicating Pregnancy: Cases. T. R. Ayars, St. Louis. —p. 252.

New York State Journal of Medicine, New York

26: 627-660 (July 15) 1926

Mental Health of School Children. W. A. Howe, Albany.—p. 627.
Doctors Need Health Viewpoint. F. A. Sherman, Albany.—p. 631.
Control of Common Communicable Diseases at Cornell University. A. G. Gould, Ithaca.—p. 632.
Epithelioma of Face and Buccal Cavity. J. O. Wetzel, Ossining.—p. 634.
Strangulated Inguinal Hernia in Infants. F. S. Wetherell, Syracuse. —p. 640.
Treatment of Acute Gonococcus Urethritis in Male. A. E. Man, New York.—p. 642.

Northwest Medicine, Seattle

25:341-398 (July) 1926

*Liver Function Tests: Clinical Value. K. Winslow and W. E. Gibb, Seattle—p. 341.
Newer Methods in Treatment of Diseases of Heart. F. A. Willius, Rochester, Minn—p. 348.
*Fractures of Upper Extremity: Treatment. W. A. Taylor, Ellensburg, Wash—p. 355.
Fractures of Leg. H. E. Cleveland, Burlington, Wash—p. 361.
Normal and Abnormal Epiphyses. C. E. Koenig, Seattle—p. 365.
Bone Sarcoma. H. W. Stone, Boise, Idaho—p. 370.
Brodie's Abscess. Two Cases. R. A. Quigley, Everett, Wash—p. 374.
Effect of Exercise on Circulation, Sugar Metabolism and Other Factors. B. Gordon, Philadelphia—p. 376.
Hemorrhagic Smallpox: Ten Cases. J. A. Weber and F. H. Douglass, Seattle—p. 379.
Progress in Blood Transfusion. L. L. Nunn, Seattle—p. 381.

Value of Liver Function Tests.—Winslow and Gibb favor the indirect van den Bergh reaction but point out that in differential diagnosis all liver function tests are still of doubtful value. In three cases of metastatic cancer they failed to obtain dye retention, even in the most extensive liver involvement. In atrophic portal cirrhosis, retention of bromsulphalein in the blood was marked in some cases but wholly absent in others, so that absence of dye retention does not exclude a diagnosis of portal cirrhosis.

Treatment of Fractures.—Taylor advocates the use of the fluoroscope in reduction of fractures; in brachial plexus anesthesia in fractures of the arm; in early accurate reduction and early mobilization and the more general use of physiotherapy methods in after-treatment.

Oklahoma State Medical Association Journal, Muskogee

14:168-208 (July) 1926

Medical Cooperation. A. S. Risser, Blackwell.—p. 168.
History of Obstetrics. R. M. Anderson, Shawnee—p. 173.
General Practitioner. C. T. Hendershot, Tulsa—p. 176.
Duodeno Arteriomesenteric Ileus. F. A. Hudson, Enid.—p. 178.
Nasal Obstruction in Early Life. J. W. Beyer, Tulsa—p. 183.

Physical Therapeutics, Baltimore

44:363-416 (July) 1926

Electrocoagulation and Desiccation of Surface Malignancies. T. H. Plank, Chicago—p. 363.
*Clinical Action of Diathermy. F. DeKraft, New York.—p. 368.
Roentgen Ray Therapy of Uterine Hemorrhage and Fibroids. M. L. H. A. Snow, New York—p. 375.
*Endothermy and Combined Therapy in Dermatology. G. M. MacKee and J. J. Eller, New York.—p. 391.

Diathermy Has Tonic Effect.—DeKraft asserts that diathermy, properly applied to the head in moderate dosage, has a general tonic and reconstructive effect on the entire system, in addition to its purely local effect. Because of its action on the sympathetic and the autonomous nervous system, certain definite clinical effects ensue in disorders of the circulatory apparatus and also in other states of disordered function resulting from pathologic changes of different degrees.

Endothermy and Roentgen Ray for Keloid.—MacKee and Eller report a case of rapid cure of a large keloid by the combined use of the endotherm knife and small doses of roentgen rays, and a case of removal of a cavernous angioma from the occipital region of the scalp of a baby by the use of bipolar endothermy.

Quarterly Review of Biology, Baltimore

1:315-464 (July) 1926

Abnormal Sexuality in Animals. I. Genotypical. F. A. E. Crew, Edinburgh—p. 315.
Human Types. R. B. Bean, Charlottesville, Va—p. 360.
Biology of Host Parasite Relationships Among Protozoa Living in Man. R. W. Hegner, Baltimore—p. 393.
Maturation Divisions in Relation to Segregation of Homologous Chromosomes. E. E. Carothers, Philadelphia—p. 419.
Eleven Thousand Generations of Paramecium. L. L. Woodruff, New Haven, Conn—p. 436.

Surgery, Gynecology and Obstetrics, Chicago

43:1-128 (July) 1926

*Trigon of Bladder as Factor in Urinary Obstruction. F. Hinman and M. B. Wesson, San Francisco—p. 1.
*Arthroplasty on Hip: Forty Eight Cases. W. C. Campbell, Memphis, Tenn—p. 9.
*"Tenosuspension" for Habitual Dislocation of Shoulder. M. S. Henderson, Rochester, Minn.—p. 18.
*Combined Intra-Uterine and Extra-Uterine Pregnancy. E. Novak, Baltimore.—p. 26.
*Tendency to Acidosis in Toxemia of Pregnancy. W. E. Levy, New Orleans.—p. 38.
*Intradermal Salt Solution Test in Normal and Toxemic Pregnancies: Diagnostic and Prognostic Aid. A. F. Lash, Chicago—p. 40.
Surgery of Gallbladder. W. J. Mayo, Rochester, Minn—p. 46.
*Carcinoma of Rectum and Sigmoid. A. W. Jacobs, New York.—p. 50.
Ureteral Stricture: Seventy Six Cases. A. H. Peacock and R. F. Hain, Seattle—p. 54.
Value of Enterocolostomy Combined with Enterostomy in Acute Peritonitis. J. W. Long, Greensboro, N. C.—p. 61.
*Pathologic Fracture in Charcot's Disease of Hip Joint. A. Thomas, Denver.—p. 66.
*Concurrence of Tuberculosis and Cancer of Breast. L. W. Smith and R. L. Mason, Boston—p. 70.
*Carcinoma and Epithelioma in Persons Under Twenty-Six Years of Age. L. H. Fowler, Rochester, Minn—p. 73.
Conservative Cesarean Section by Lower Uterine Segment Incision. J. M. M. Kerr and J. Hendry, Glasgow, Scotland—p. 85.
Technic of Cardiolysis. V. Schmieden, Frankfort-on-the-Main, Germany.—p. 89.
Technic of Equalizing Leg Length. R. O. Ritter, Chicago—p. 93.
*Two Flap Incision for Cancer of Breast. R. R. Smith, Grand Rapids, Mich.—p. 95.
*Determining Patency of Fallopian Tubes at Laparotomy. J. E. Miles, New York—p. 97.
Pressure Bags for Skin Grafting. F. Smith, Grand Rapids, Mich.—p. 99.
Prolongation of Local Anesthesia. G. de Takats, Chicago—p. 100.
Conservative Treatment of Cervical Erosions with Electrocoagulation. F. M. Mikels, Long Beach, Calif.—p. 105.

Trigon of Bladder Causes Urinary Obstruction.—Hinman and Wesson report four cases in which hypertrophy of the interureteral ridge resulted from chronic vesical irritation and produced obstruction to urination. The treatment is surgical by suprapubic cystotomy and (1) either incision of the ridge with suture and ligature of the incised edges to control hemorrhage, or (2) resection of the ridge and the supratrigonal pouch with restoration of the base of the bladder, which is the preferable method when these pouches are deep.

Arthroplasty on Hip.—In nine of sixteen arthroplasties of the hip with unilateral ankylosis reported by Campbell, the result was excellent; it was fair in two cases and doubtful in one case. In two cases there was a recurrence of the ankylosis. Of the thirteen arthroplasties of the hip with bilateral ankylosis, four were failures; four patients had excellent motion in one hip; one had slight motion in both hips; two died of acute sepsis and in one case the result is unknown.

Tenosuspension for Habitual Shoulder Dislocation.—Henderson follows Joseph's technic, except that he uses a full thickness of the peroneus longus muscle, instead of fascia lata. He does not favor capsulorrhaphy.

Combined Intra-Uterine and Extra-Uterine Pregnancy.—Thirty-two cases of combined simultaneous intra-uterine and extra-uterine pregnancy are collected by Novak from the literature, from 1913 to the present. These include two new cases observed by the author. These, added to the 244 cases collected by Neugebauer in the literature from 1708 to 1913, bring the total to date up to 276.

Blood Chemistry in Toxemia of Pregnancy.—Levy has studied the blood chemical determinations in fifty cases of preeclamptic toxemia. He asserts that the toxin of eclampsia produces definite destruction of the liver lobules. The destruction of liver substances causes a derangement of the carbohydrate metabolism and glycogen storage. The blood sugar and carbon dioxide combining power are lowered. A state of acidosis is either imminent or present. The rational treatment is with dextrose or dextrose and insulin. The total elimination of protein from the diet of this type of patient is not only nonessential but also undesirable. The fats are the elements that should be eliminated.

Intradermal Salt Solution Test in Pregnancy.—The intradermal salt solution test was made by Lash in forty-seven normal pregnant women at term to ascertain the normal disappearance time during pregnancy, and in forty-six women (including seventeen eclamptic patients) with the late toxemias of pregnancy. The disappearance time of the solution in normal pregnant women was longer in the negro than in the white. This racial difference can possibly be explained by the thicker skin in the negro. The women with the toxemias of pregnancy showed definitely decreased disappearance time, more marked in those with convulsions. The degree of decrease in the disappearance time varied directly with the degree of severity of the toxemia, increasing with the general clinical improvement. The same factor or group of factors that produces the edema, hypertension and albuminuria in the late toxemias of pregnancy apparently produces the condition in the tissues that give a decreased disappearance time.

Treatment of Carcinoma of Rectum and Sigmoid.—It is evident, from the comparative study made by Jacobs of the patients treated by radical surgery and by colostomy, that the longest postoperative duration of life was obtained when consultation and diagnosis were made early and followed by radical surgery. The majority of cases of carcinoma of the rectum are recognized when it is too late to accomplish much by radical surgery. To give a good surgical result, the diagnosis must be made early. Surgical statistics in the more advanced cases are not encouraging. It is in those cases that the proper combination of surgery and radiotherapy can accomplish something toward the alleviation of symptoms and the control of the growth of the neoplasm. Radium, when properly applied, will bring about a definite inhibitory and destructive effect in the majority of rectal neoplasms. In selected cases radiation should be used before and after operation. Deep roentgen-ray therapy should also be given in the pelvis with the hope first, of destroying or decreasing the amount of lymphatic tissue, and thus decreasing the opportunity for metastasis; and second, of destroying or inhibiting the growth of metastatic nodules.

Treatment of Fracture in Charcot's Disease of Hip Joint.—Thomas's case is said to show that a good functional result can be obtained in fractures of the hip joint with tabetic arthropathy in which the same mechanical treatment is carried out as in fractures of the femoral neck occurring in normal bone.

Concurrence of Tuberculosis and Cancer of Breast.—A case of associated tuberculosis and carcinoma of the right breast in a woman, aged 38, is reported by Smith and Mason, without clinical evidence of any other associated tuberculosis. The literature is reviewed, indicating that there are only eighteen other cases that can lay claim to proof of concurrence of the two diseases. The obvious theoretical conclusions are that the two conditions either occur independently or are dependent on each other, in this case the tuberculosis apparently being superimposed on a scirrhous carcinoma.

Carcinoma and Epithelioma in Young Persons.—One hundred and twelve patients less than 26 years of age, with pathologically demonstrated carcinoma and epithelioma, were studied by Fowler. There were eighty-nine cases of carcinoma and twenty-three of epithelioma. The youngest patient was 1 year of age. The total known mortality was more than 50 per cent (18.7 per cent could not be traced). Only 14.2 per cent are alive more than three years after operation. Nearly every organ in the body has been the seat of carcinoma in the young. The rectum and ovary were most frequently involved (fourteen cases each); carcinoma of the rectum had the highest known mortality (85.7 per cent), with no patient known to live longer than one year. The other organs involved were as follows: stomach in nine cases; testis, lip, cervix, each in five cases; miscellaneous, in thirty-nine cases. Anemia is a feature of carcinoma of the right half of the colon in youth, as in adult life. Involvement of the neighboring lymph nodes in carcinoma of the breast and large intestine in youth reduces postoperative life and increases the ultimate mortality. In youth, carcinoma in the thyroid is usually found by the pathologist and not by the surgeon; it is intracapsular and its mortality is low.

Two Flap Incision for Breast Cancer.—The incision described by Smith begins at about the middle of the clavicle, extends downward and outward to the edge of the pectoralis major, proceeds along its edge to a point near the breast itself, then passes toward the middle line and around the inner side of the breast. Instead of encircling the breast, however, it proceeds straight downward, parallel with the sternum to a point well over the edge of the ribs and the upper part of the rectus muscle. It then curves sharply outward and proceeds for several inches to a point that allows sufficient mobilization of the lower flap. A second incision encircles the breast, beginning at the edge of the pectoralis major and passing around the outer side of the breast, then toward the median line to meet the first one. These flaps are raised; the edges of the incision are everywhere well undermined, and the removal of the breast with all of the fascia, muscle, and axillary contents proceeds as in all breast amputations for cancer.

Determining Patency of Fallopian Tubes.—Miles describes his modification of Rubin's technic to determine whether gas or air can be introduced through one or both of the tubes. The method determines whether one or both tubes are open, or the site of constriction, at a time when constructive surgery can be applied.

Texas State Journal of Medicine, Fort Worth

22: 167-234 (July) 1926

Treatment of Acute Mastoiditis. J. T. Crebbin, New Orleans.—p. 182.
Telescopic Spectacles and Magnifiers. R. K. Daily, Houston.—p. 187.
Results Attained Through Federal Supervision of Water Supplies Used in Interstate Traffic. A. F. Allen, Washington, D. C.—p. 189.
Public Health Nursing and Medical Profession. E. Vaughan, St. Louis.—p. 194.
State Psychiatric Institute: Prerequisite to Development. V. D. Thomas, Terrell.—p. 197.
Chorio-Epithelioma. E. B. Rogers, El Paso.—p. 199.
Arteriosclerosis and Allied Conditions. I. L. Van Zandt, Fort Worth.—p. 203.
Early Diagnosis of Syphilitic Aortitis. J. Kopecky, Galveston.—p. 205.
Pericarditis with Effusion. B. F. Smith, Houston.—p. 209.
Cervix Uteri of Parous Women. B. O. Works, Brownsville.—p. 212.
Present Status of Cancer Problem. W. S. Bainbridge, New York.—p. 214.

U. S. Naval Medical Bulletin, Washington, D. C.

24: 461-698 (July) 1926

Selection of Personnel for Submarines. R. F. Jones.—p. 461.
Specialism in Navy Medical Corps. N. J. Blackwood.—p. 476.
Botanizing in Haiti. E. L. Ekman.—p. 483.
Supply Table of Medical Department, U. S. Navy. A. B. Montgomery.—p. 497.
Early Treatment of Facial Injuries. L. W. Johnson.—p. 508.
Lethargic Encephalitis. H. M. F. Behneman.—p. 515.
*Data on Culebra. W. A. Bloedorn and E. Hakansson.—p. 534.
Activities at U. S. Naval Hospital, Newport, R. I., During "Mackinac" Disaster. C. E. Riggs.—p. 544.
Food History and Protein Sensitization Tests in Epilepsy. L. H. Roddis.—p. 553.
Seven Thyroidectomies. G. F. Cottle.—p. 557.
Cholecystography with Sodium Tetraiodophenolphthalein. C. M. Shaw.—p. 562.
*Congenital Polycystic Kidney. E. B. McGregor.—p. 571.
Rabies: Animal Experimentation. J. B. Logue and O. B. Morrison, Jr.—p. 574.
Dislocation of Head of Fibula. W. W. Hall.—p. 577.
Treatment of Multiple Fractures of Bones of Face. M. W. Mangold.—p. 580.
Anemia, Splenic (Banti's Disease). A. J. Toulon.—p. 581.

Barracuda Not a Poisonous Fish.—Bloedorn and Hakansson take the stand that the barracuda in good health is not a poisonous fish, and that all cases of barracuda poisoning reported in the literature and in the wardroom were due either to disease or to postmortem change. In view of the fact that the barracuda is an important food fish in many parts of the world and one frequently caught in the fleet, it becomes important to establish the facts in regard to the poisonous qualities of this fish. The authors and others suffered no inconvenience from eating barracuda at Culebra over a period of five *months*. It is important to gut the fish soon after it is caught and then keep it frozen in a refrigerator until prepared for food.

Congenital Cystic Kidney.—The case reported by McGregor was not recognized until necropsy. The first symptom that brought the patient to the attention of a medical officer was a cerebral hemorrhage, and he died a couple of hours after admission to the hospital.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Biochemical Journal, London

20: 447-649, 1926

*Kidney Function. I. Rate of Filtration and Reabsorption in Human Kidney. P. B. Rehberg.—p. 447.

*Id. II. Excretion of Urea and Chlorine Analyzed According to Modified Filtration-Reabsorption Theory. P. B. Rehberg.—p. 461.

Determination of Chlorine in Blood and Tissues by Microtitration. P. B. Rehberg.—p. 483.

Carbohydrate Metabolism. I. Utilization of Dihydroxyacetone by Animal Body and Method for Its Estimation. W. O. Kermack, C. G. Lambie and R. H. Slater.—p. 486.

Color Reactions Attributed to Vitamin A. F. H. Carr and E. A. Price. —p. 497.

Stone Cells of Pear. C. Dorée and E. C. Barton-Wright.—p. 502.

Kinetics of Hemolytic Systems. I. E. Ponder.—p. 507.

Vitamins (A, B and C) of Papaya. C. D. Miller.—p. 515.

Action of Reducing Agents on Antiscorbutic Factor Inactivated by Aeration. C. G. Daubney and S. S. Zilva.—p. 519.

Action of Hypochlorites on Amino-Acids and Proteins. N. C. Wright. —p. 524.

Hydrolysis of Asymmetric Esters by Lipase. E. R. Dawson, B. S. Platt and J. B. Cohen.—p. 533.

*Antirachitic Properties of Irradiated Sterols. O. Rosenheim and T. A. Webster.—p. 537.

Equilibrium Between *l*-Aspartic Acid, Fumaric Acid and Ammonia in Presence of Resting Bacteria. J. H. Quastel and B. Woolf.—p. 545.

Carbohydrate Metabolism. I. Relation Between Optical Activity and Reducing Power of Normal Blood Filtrates. II. Interaction of Muscle Tissue, Insulin and Glucose. A. B. Anderson and A. Carruthers.—p. 556.

Comparsion of Various Methods of Obtaining Ash-Free Pectin. A. M. Emmett.—p. 564.

Phosphates in Nonirritable Muscle. J. T. Edsall.—p. 569.

Relation of Enzymes Trypsin and Pepsin to Their Substrates. G. E. Briggs.—p. 574.

*State of Calcium in Body Fluids. J. Marrack and G. Thacker.—p. 580.

Reducing Substances Found in Alcoholic Extracts of Brain. E. G. Holmes and B. E. Holmes.—p. 595.

Effect of Benzene and Benzene Derivatives on Sulphur Metabolism of Dog III. E. H. Callow and T. S. Hele.—p. 598.

Id. IV. Mechanism of Mercapturic Acid Formation in Dog. H. I. Coombs and T. S. Hele.—p. 606.

Degradation of Glucose by Blood Corpuscle of Rabbit. J. T. Irving.—p. 613.

*Relative Sensitivity of Benzidine and Phenolphthalein Tests for Blood. A. D. Stammers.—p. 620.

Difference in Chemical Composition of Skeletons of Young Rats Fed (1) on Diets Deprived of Fat-Soluble Vitamins and (2) on Low Phosphorus Rachitic Diet, Compared with Those of Normally Nourished Animals of Same Age. H. Chick, V. Korenchevsky and M. H. Roscoe.—p. 622.

*Influence of Diet and Sunlight on Amount of Vitamin A and Vitamin D in Milk Afforded by Cow. H. Chick and M. H. Roscoe.—p. 632.

Kidney Function.—The filtration-reabsorption theory is discussed by Rehberg, and the different ways in which a diuresis may be obtained according to the filtration-reabsorption theory are enumerated.

Kidney Function.—The filtration-reabsorption theory and especially the way in which it distinguishes between threshold and no-threshold substances is discussed by Rehberg. The difference between active reabsorption and mere back-diffusion is emphasized and a working hypothesis is put forth. The excretion of urea and chlorine is analyzed in two series of experiments according to this hypothesis.

Antirachitic Properties of Irradiated Sterols.—Rosenheim and Webster state that cholesterol is rendered antirachitic by exposure to sunlight as well as to other sources of ultraviolet rays. By irradiating cholesterol in the absence of oxygen, he finds that the stability of the "activated" cholesterol is considerably increased. An amorphous substance which prevents rickets in rats in doses of 1/100 mg. per day has been separated from "activated" cholesterol by precipitating the cholesterol with digitonin. Both the secondary alcohol group and the unsaturated carbon linkage of the sterol molecule must be intact for the production of antirachitic properties by ultraviolet rays.

Calcium in Body Fluids.—Marrack and Thacker report on their studies on the state of calcium in the body fluids, as follows: Calcium forms an unionized compound with proteins; the formation of this compound accounts for the so-called indiffusible calcium of serum. The calcium of body fluids is partly in the form of calcium ion and partly in the form of unionized protein compound. The calcium ion concentration of plasma is slightly higher than the calcium concentration of cerebrospinal fluid. The calcium ion concentration of body fluids is not regulated by the solubility of calcium carbonate and calcium phosphate. Epilepsy is not caused by a reduction of calcium ion concentration in body fluids.

Relative Sensitivity of Blood Tests.—Stammers has found the phenolphthalein reagent, when used with blood diluted with water alone, from ten to thirty times as sensitive as the benzidine reagent; and the phenolphthalein reagent, when used with urine containing blood, is from three to four times as sensitive as the benzidine reagent. The reagent also gives satisfactory results when used for the detection of occult blood in feces.

Influence of Diet and Sunlight on Vitamin in Milk.—Experiments have been made by Chick and Roscoe, in continuation of those of Luce, in which a cow has been kept under varied conditions of diet and light and the milk obtained tested for its content of (growth-promoting, antixerophthalmic) vitamin A and of (growth-promoting, antirachitic) vitamin D. The vitamin A content of the milk was found to be dependent on the diet of the cow, being at a maximum when the cow received a winter feed of cereals and roots. The degree of exposure of the cow to sunlight had no influence on the vitamin A value of the milk. The antirachitic value of the milk (vitamin D content), on the other hand, was found to depend principally on the degree of isolation of the cow. At the same time there was some indication that the diet of the cow, if consisting of fresh green food, was a contributory factor. These experiments confirmed those of Luce in showing that "pasture-fed" milk possessed the maximum antirachitic value, while that yielded by the cow when receiving a diet of cereals and roots appeared on the whole inferior in this respect, in spite of exposure to maximum illumination out of doors in summer. The milk contained the maximum amount of both fat-soluble vitamins, A and D, when the cow was out at pasture in summer. Attention is called to the disadvantage of confining milch cows in stalls, when the milk is required for the nutrition of infants and young children.

Brain, London

***49:** 157-255 (June) 1926*

*Combined Disease of Pyramidal and Extrapyramidal Systems: New Syndrome. J. Lhermitte and D. McAlpine.—p. 157.

Lymphorrhages in Muscles in Exophthalmic Goiter. L. S. Dudgeon and A. L. Urquhart.—p. 182.

Deep Sensibility. O. M. Duthie.—p. 187.

*Abscess of Spinal Cord. H. W. Woltman and A. W. Adson, Rochester, Minn.—p. 193.

Decerebrate Rigidity of Sloth. C. P. Richter and L. H. Bartemeier.—p. 207.

Colloidal Paraffin Reaction in Cerebrospinal Fluid. A. M. Critchley.—p. 226.

Combined Disease of Pyramidal and Extrapyramidal Systems.—A brief résumé is given by Lhermitte and McAlpine of conditions in which signs of both pyramidal and extrapyramidal disease occur. A case is described in which clinically there appeared rigidity with akinesia, choreiform movements and signs indicating a pyramidal tract lesion, and, pathologically, alterations in the corpus striatum, especially in the putamen, with slight degeneration of both pyramidal tracts. This syndrome is differentiated both clinically and pathologically from other conditions resembling it. The physiopathologic basis of chorea is briefly discussed.

Abscess of Spinal Cord.—To the twenty-nine cases of spinal cord abscess already on record, Woltman and Adson add one case. The patient was a girl, aged 11. The diagnosis in this case was meningomyelitis with spinal block. The chief symptom was spasticity and almost complete paralysis of the legs. There was no pain. Owing to the progression, the establishment of a level and the evidence of block, laminectomy of the sixth, seventh and eighth dorsal vertebrae was performed. When the cord was incised along the posterior median septum, the fluid contents of the encapsulated abscess, about 1.5 cm. in length, escaped. The fluid revealed was pus; no organism could be found on staining; there was no growth on blood agar, but a slight growth of staphylococci appeared in dextrose broth; inoculation of two guinea-pigs with the pus did not cause infection. The patient eventually made a complete recovery. In only one of the other twenty-nine cases on record did the patient survive.

British Medical Journal, London

2: 51-102 (July 10) 1926

*Angina Minor. J. Hay.—p. 51.
*Place and Function of Tuberculosis Dispensary. R. Philip.—p. 55.
Hypoglycemia Due to Insulin in Children. G. A. Harrison.—p. 57.
Aid to Radiography of Maxillary Antrum. B. McKelvie.—p. 58.
*Pinning Fractured Ulnar Styloid Process in Colles' Fracture. F. J. Hathaway.—p. 59.
*Congenital Absence of Pectoral Muscles. H. W. Jones.—p. 59.
Value of Anatomic Detail. R. K. Shearer.—p. 60.
Huntington's Chorea. F. Back.—p. 60.
Poisoning by Tobacco Applied to Skin. J. N. Deacon.—p. 61.
Blood Vessels of Human Skin. T. Lewis.—p. 61.

Angina Minor.—Hay reviews the clinical history of angina minor and reports briefly nine cases, three being of the eccentric type.

Function of Tuberculosis Dispensary.—The need for long supervision of those affected with tuberculosis is emphasized by Philip. He says that, by continued observation on ambulant patients and on those who have undergone sanatorium or other institutional treatment, the dispensary has proved how essential is the prolonged maintenance of such supervision and how valueless may be the result of short periods of residential treatment. By a sound system of domiciliary visitation, the dispensary has succeeded in reforming homes and households, in reducing the effects of unhealthy environment and in recreating insanitary houses after the image of the sanatorium. In this direction the dispensary's educational value to a community through doctor and nurse can hardly be overestimated.

Treatment of Colles' Fracture.—Many patients who have suffered Colles' fracture complain, months afterward, far more of weakness of the wrist joint and pain over the ulnar styloid process than of the radial fracture. A roentgen-ray examination in these cases shows that this is caused by a fracture and separation of the ulnar styloid process. Although the fractured radius may be accurately replaced yet, if roentgen-ray examination shows the styloid process of the ulna to be still separated, Hathaway insists that open operation should be performed in order to get good bony union of the fractured surfaces, and not the fibrous union that would otherwise result. It is by this means that pain and weakness of the wrist-joint can be prevented. Hathaway drives an ordinary straight bayonet-shaped needle through the fragment into the lower end of the ulna in a direction downward and slightly toward the flexor and radial side of the forearm. When the needle has been driven sufficiently far to fix the styloid fragment, it is cut off with wire clippers, the fascia replaced, and the wound sewn up.

Congenital Absence of Pectoral Muscles. — The case described by Jones was that of a girl, aged 13, with absence of the pars sternocostalis of the pectoralis major and the pectoralis minor on the right side. There was considerable hypertrophy of the clavicular portion of the pectoralis major and of the deltoid on that side. The breast on the right side was absent, and the ribs in that position were merely covered over with skin and subcutaneous tissue. There was no loss of power on the affected side, owing to hypertrophy of the deltoid and clavicular part of the muscle.

Glasgow Medical Journal

106: 1-80 (July) 1926

Water: Its Physiologic Significance. E. P. Cathcart.—p. 1.
Alcohol Injection in Trigeminal Neuralgia. G. Dalziel.—p. 15.
Neuralgias of Head: Trigeminal Neuralgia. J. R. Learmonth.—p. 22.
*Case of Sacrococcygeal Chordoma. J. A. M. Cameron.—p. 38.

Sacrococcygeal Chordoma.—Cameron reports the case of a married woman, aged 59, who had a large tumor occupying the internal aspect of the sacrum and lower lumbar vertebrae, probably of about three years growth. Pain and swelling of the limbs and the lower abdomen were the principal features; no involvement of the bladder or rectum occurred. Death was due to pulmonary embolism. The tumor, microscopically, was found to be a chordoma presenting these characteristic features: alveolar arrangement of true notochordal cells with mucoid degeneration; in parts, like the notochord in a second month's fetus, in others, with degeneration so advanced that only a few nuclei were seen in a matrix of mucin; vacuolation of nuclei and vacuoles apparently independent of cytoplasmic changes, the former containing glycogen, the latter a glycoprotein mucin. This tumor is usually of slow growth, and the more benign it is the more mucin it contains; metastases are rare. Surgical intervention is likely to be more useful than treatment by roentgen rays, and partial removal may delay development for a long period.

Irish Journal of Medical Science, Dublin

7: 297-344 (July) 1926

Subacute Combined Degeneration of Spinal Cord. D. A. MacErlean.—p. 301.
Contraction vs. Retraction Ring in Labor. G. W. Theobald.—p. 318.
Two Cases of Lymphosarcoma of Lung. T. J. O'Donnell.—p. 324.
Exomphalos in Infant. D. T. Cannon.—p. 326.

Journal of Biochemistry, Tokyo

6: 101-260 (April) 1926

Influence of Neutral Salts on Potential of Glycocol Solution Against Hydrogen Electrode. S. Kawai.—p. 101.
Studies on Water Purification. IV. Adsorption of Neutral Salts by Kambara Earth. S. Oikawa.—p. 117.
Chemical Composition of Laiche of Hemifusus Tuba Gmel. Y. Komori.—p. 129.
Influence of Bile Acids on Albumin Metabolism in Salivary Glands and Significance of Choleic Acid. R. Karasawa.—p. 139.
Relationship of Nicotinic Acid to Picric Acid and Picrolic Acid. Y. Sendju.—p. 161.
Comparative Chemistry. III. Behavior of Nicotinic Acid in Organism of Mammals and Birds. Y. Komori and Y. Sendju.—p. 163.
Behaviour of o-Nitrobenzaldehyde, o-Aminobenzaldehyde and Anthranil in Animal Organism. T. Hosoda.—p. 171.
Phosphorus Distribution in Muscle and in Liver Under Various Conditions Especially Under Influence of Hormones. Y. Oda.—p. 179.
Action of Parasympathetic Poisons on Blood Sugar: Parasympathetic Hyperglycemia. T. Sakurai.—p. 211.
Rapidity of Sedimentation of Erythrocytis and Plasma Albumin Displacement in Animals Injected with India Ink. S. Tsunekawa.—p. 237.

Journal of Laryngology and Otology, Edinburgh

41: 421-492 (July) 1926

Influence of Blood Pressure Alterations on Experimental Vestibular Nystagmus. Y. Meurman.—p. 421.
Paths of Infection to Brain Meninges and Venous Blood Sinuses from Neighboring Peripheral Foci of Inflammation. II. A. L. Turner and F. E. Reynolds.—p. 442.
Foreign Bodies in Nose. D. Guthrie.—p. 454.
Papilloma of Larynx with Complete Aphonia of Eleven Years' Duration. J. M. Baxter.—p. 458.

Journal of Pathology and Bacteriology, Edinburgh

29: 225-324 (July) 1926

*Enterococcus. S. V. Bagger.—p. 225.
Epithelial Tumor in Spleen of Rabbit. N. D. Ball.—p. 239.
*"Oat Celled Sarcoma" of Mediastinum. W. G. Barnard.—p. 241.
*Case of Polyarteritis Acuta Nodosa. J. Gray.—p. 245.
Receptor Structure of Vibrio Cholerae (V. Comma): Variations in Cholera-Like Organisms. I. Balteanu.—p. 251.
*Third Agglutinating System in Human Blood. F. W. Simson.—p. 279.
Nutritive Requirements of Growing Cells. T. B. Heaton.—p. 293.
Complement Fixation with Bilharzia: Failure to Produce Anaphylaxis with Cercarial Extract Used in Test for Mammalian Bilharziosis. A. W. Turner.—p. 307.
Carcinoid Tumor of Ileum with Metastases. C. Dukes and P. L. Mummery.—p. 308.
Influence of Locally Injected Indian Ink Suspensions on Intracutaneous Response to Vaccinia and Other Viruses. J. C. G. Ledingham.—p. 309.
Combination of Bismuth and Sodium Sulphite Affording Enrichment and Selective Medium for Typhoid-Paratyphoid Groups of Bacteria. W. J. Wilson and E. M. M. Blair.—p. 310.

Enterococcus. — Enterococci isolated from peritonitis (ninety-two strains) and from normal intestines (fifty-eight strains) have been examined by Bagger. It is moderately pathogenic to rabbits and mice but not to guinea-pigs. There is no demonstrable toxin.

Oat Cell Sarcoma of Mediastinum.—Barnard asserts that the so-called "oat-celled sarcoma" of the posterior mediastinum is a medullary carcinoma of bronchi.

Polyarteritis Acuta Nodosa.—Gray relates the case of a boy, aged 12, who scratched his left knee and within nine weeks was ill with symptoms of sepsis in the thigh. Roentgen-ray examination did not show any bone or joint changes. A blood culture at this stage gave no growth. The swelling and pain gradually subsided, but at the end of a month the temperature remained elevated and the patient's condition was evidently steadily deteriorating. He did not complain of much pain, but the leg was stiff and flexed and there was some pain and stiffness in other joints as well. A blood culture gave a growth of *Staphylococcus albus* only; a catheter specimen of urine proved sterile. After nine weeks of illness, the patient seemed as usual and did not appear to be in any immediate danger, but was suddenly found dead in bed Death was evidently due to rupture into the peritoneal cavity of a saccular aneurysm of the cystic artery. Further examination revealed the presence of a number of aneurysmal dilatations in other parts of the body and marked arterial changes in the intrahepatic branches of the hepatic artery, the smaller branches of the renal arteries and the coronary arteries The aorta, the superior mesenteric artery and the hepatic artery appeared to be healthy, as did all the larger branches of the aorta. Both coronary arteries were thickened and tortuous, showing on the heart surface as prominent tortuous white cords, with bluish thrombus-filled spherical nodules here and there along their course. These nodules were of aneurysmal nature. On cross section at various points, the cut surface of the artery was frequently almost solid and very white, with a minute, usually eccentric, lumen The largest aneurysm was nearly as large as a coffee bean and lay on the right coronary artery near its origin. Nothing was found in the left thigh, in either the bone or the glands.

Third Agglutinating System in Blood.—The work done by Simson confirms the observations of others, that a third pair of agglutination elements exists in human blood.

Journal of State Medicine, London

34: 373 434 (July) 1926

Immunization in Certain Infectious Diseases S M. Copeman—p 384.
Relation of Animal Diseases to Man at Home and Abroad. P Bassett-Smith—p 397
Statistical Characteristics of Pulmonary Silicosis. E L. Collis—p 401.
Relationship Between Modern University and Community in Public Health J G Adami—p 405
Concerning Nature of Malignancy J. G Adami—p. 413.
Smokeless Atmosphere. W. B. Smith—p 422.

Medical Journal of Australia, Sydney

1: 689 718 (June 19) 1926

British Medical Association and Statecraft. J E F. Stewart—p. 689.
Cerebral Vascular Lesions. H W. Moxon—p 690
Sequelae of Lethargic Encephalitis H F Maudsley—p 696
Pseudomyxoma Peritonei M V Southey and R Webster—p 703
Case of Pseudomyxoma Peritonei of Appendiceal Origin in Female. W. G Cuscaden—p 704.

1: 719 738 (June 26) 1926

Occipitoposterior Position A J. Gibson—p. 719.
Breech Delivery H. A Ridler.—p 728.

Okayama Medical Journal, Okayama, Japan

437: 611-722 (June) 1926

Adsorption of Drugs Wrought by Various Kinds of Adsorbents. Y. Takahashi—p 611
So Called Dormant Cells of Cornea K Hudu—p 666
Grape Sugar and Gastric Secretion M Kobayashi—p 683.
Comparison of Goat Hemolysins with Forssman Antibodies J Kageyama.—p 691.

South African Medical Record, Cape Town

24: 265 288 (June 26) 1926

Survey of One Thousand Consecutive Dermatologic Cases. H. M. Bosman—p 266
Pyorrhea C Marais—p 271
Dental Disease and Its Influence on Health and Development of Child: Prenatal Stage S Winer—p 274
Birth to Six Years of Age. J H C Davis—p. 276
Six Years Old or School Age H J Barclay.—p 278.
Prenatal Stage A. M Geddes—p 280
Birth to Six Years of Age J. P. Duncan—p. 281.

Annales de Dermatologie et de Syphiligraphie, Paris

7: 321-384 (June) 1926

*Erythroderma from Arsenical Treatment. E Jeanselme et al—p 321
Wassermann Test Performed with Chancre Fluid. M. Kitchévatz—p. 332.

Itching Eruption, Bronzing and Horny Skin of Arsenical Origin.—A pregnant woman, aged 19, was treated with neo-arsphenamine for suspected syphilis. The day after her delivery she developed a severe erythroderma of the face, neck, trunk and thighs, followed first by hyperkeratosis and then by bronzed pigmentation of the skin of the neck and shoulders. The occurrence, simultaneous with the eruption, of the horny transformation of the skin, testified to arsenical poisoning The latter may have been favored by pregnancy, and especially delivery. Histologic examination revealed that the skin follicles were particularly involved in the inflammatory process. There was considerable alopecia, with destruction of hair bulbs and papillae, and even of sebaceous glands.

Bulletins de la Société Médicale des Hôpitaux, Paris

50: *1101-1154 (June 25) 1926*

*Antitoxin and Chloroform in Treatment of Tetanus. A Ravina—*p. 1103.*
Tardy Congenital Tabes H. Dufour et al.—p. 1104.
*Serotherapy Plus Chloroform in Tetanus. H. Dufour et al—p. 1106
Insufficiency of Venules and Tuberculids G. Delater and R. Hügel—p 1108
*Urticaria from the Sun's Rays Pasteur Vallery-Radot et al—p. 1116.
By Effects of Prolonged Insulin Treatment. M. Labbé.—p. 1123.
Familial Hematemesis and Melena Cassapian—p 1130.
Skin Pigment and Ultraviolet Rays A C. Guillaume.—p 1133.
*Hereditary Hemorrhagic Angiomatosis P. Emile Weil—p 1135.
Treatment of Abscess of the Liver. P. A. Petridis—p. 1140.
Peritonitis from Rupture of Hepatic Abscess. Petridis—p 1145.
Case of Exophthalmic Goiter, Myxedema and Scleroderma. Pasteur Vallery Radot et al—p 1149.

Chloroform as Adjuvant in Serotherapy of Tetanus.—Ravina's patient, a man aged 26, developed an extremely severe generalized tetanus, ten days after a punctured wound of the foot. Suppuration of the wound required clearing out of the focus, forty-eight hours after the onset of the tetanus, and under the chloroform anesthesia used for this operation, 40 cc. of tetanus antitoxin was reinjected by lumbar puncture. The lockjaw, contractions and respiratory hindrance improved markedly the next day. Two further intraspinal injections were made two days apart, under the same anesthetic. A total of 200 cc of tetanus antitoxin, and 120 Gm. of chloroform was used. Complete recovery occurred in sixteen days. The favorable influence of chloroform on the course of tetanus in this case, was beyond question, Ravina says. No phenomena of serum sickness occurred.

Serotherapy of Tetanus plus Chloroform.—Good and rapid results from the association of chloroform with intraspinal injections of antitoxin were noted by Dufour, Widiez and Castéran in a case of tetanus following ten days after injury to the thumb, in a man, aged 30 A subcutaneous injection of 10 cc. of "purified tetanus antitoxin" twenty-four hours after the onset of symptoms was followed the next day by 20 cc beneath the skin and 10 cc. into the cerebrospinal fluid. There was no improvement Then, under chloroform anesthesia, 15 cc of the antitoxin was injected intraspinally, and 20 cc subcutaneously. Marked relief was noted the same day. Subcutaneous injections alone were given for the next four days. Recovery followed. There were no serum reactions. It seems that the antibodies of the antitoxin may influence the toxins in the nervous tissue more intensively and more rapidly under the modified cellular metabolism due to chloroform It is probable that chloroform may also lower the resistance of the nerve cells to antitoxins, spontaneously elaborated in the patient's organic fluids or supplied by the injected antitoxin.

Urticaria from Sunlight.—Pasteur Vallery-Radot, Blamoutier, Besançon and Saidman treated a woman, aged 44, who developed regularly an urticarial eruption on any part of the body, under the action of the sun's rays. The characteristic patches occurred in from one to ten minutes; they disappeared usually after ten or fifteen minutes, persisting a few days if the exposure was prolonged or repeated. The mucous membranes were never affected. No anaphylactic manifestations appeared in the personal or family history of the patient. Neither hemoclastic crises nor disturbances of endocrine glands seemed to be responsible for the sensitization to sunlight. Electric light, roentgen rays and various mechanical irritations remained without effect. The pathogenesis of this sun urticaria is obscure. Autohemotherapy and different local applications were without avail.

Familial Hemorrhagic Angiomatosis.—One of Emile-Weil's patients, a woman, aged 36, presented, besides progressive obesity, numerous angiomas, developing within the last six years. The angiomas, about thirty in number, the size of a large pin head, were located on the face and lips. Six small angiomas were on the tongue, and a few bright red spots on the body. There were also varices of the legs. Bleeding from the nose was frequent. Similar lesions occurred in the mother, a sister, a brother and an aunt. A grandfather suffered from recurring epistaxis. The other patient, a woman, aged 43, presented similar phenomena. Angiomas or hemorrhages occurred in a grandfather, father, brother, two sisters, an uncle and a cousin. In both patients, the bleeding time was normal, coagulation retarded. Personal or familial disturbances of the liver as well as blood changes of the hemocrasic type were manifest in both instances. Familial hemorrhagic angiomatosis apparently presents an analogy to hemogenia.

Comptes Rendus de la Société de Biologie, Paris

94: 1109-1172 (May 7) 1926. Partial Index

Development of the Vascular System of the Spleen and Liver. E. Barta. —p. 1122.
Cultivation of Lung Tissue Outside the Organism. L. Binet and C. Champy.—p. 1133.
*Properties of Zinc Salts. A. Lumière and H. Couturier.—p. 1166.
*Action of Epinephrine on Intestinal Muscles. Tournade et al.—p. 1171.

Zinc Salts as Inhibiting Coagulation. — Lumière and Couturier repeat their previous statement that the inhibiting action of zinc sulphate on coagulation is twenty-fold stronger than that of sodium citrate (0.05: 100 and 1: 100, respectively). Their further research on guinea-pigs showed that sodium citrate is at least twice as toxic as the zinc salt. Therefore, it seems that the latter might be advantageously used in certain blood transfusions instead of citrating the blood. On the other hand, while the citrate promotes the coagulation of blood in vivo, the zinc salt prevents coagulation both in vivo and in vitro. Consequently the citrate may be preferable in certain hemorrhages as, for instance, in hemophilia.

Physiologic Epinephrinemia. — Tournade, Chabrol and Perrin-Terrin's experiments on dogs tend to demonstrate that while the normal suprarenal secretion stimulates the contractions of the heart and vessels, it reduces the motility of the intestine. In particular, it weakens the intestinal tonus and contractions, although it does not induce paralysis.

94: 1173-1220 (May 14) 1926. Partial Index

*Spirochetes in Laryngeal Papillomas. P. Séguin and P. Logeais.—p. 1189.
*Antivirus Filtrate in Treatment of Glanders. K. Svetkoff and A. Veller. —p. 1191.
*Blood Groups in Infants. R. Debré and M. Hamburger.—p. 1196.
*Hermaphrodism and Antagonism Between Sex Glands. H. Seemann. —p. 1218.

Spirochetes in Papillomas of the Larynx.—Séguin and Logeais found spirochetes in papillomas of the larynx in three cases. They remark that they may have proceeded from the mouth. The question arises whether spirochetes play a rôle in the pathogenesis of the laryngeal papilloma.

Antivirus in Treatment of Glanders.—Svetkoff and Veller have prepared an antivirus filtrate with streptococci obtained from animals with severe glanders. During an epizootic, sixteen horses were treated with subcutaneous injections of from 50 to 100 cc. of the filtrate. In five horses treated at an early stage, the initial increase in the fever was followed by rapid defervescence and disappearance of all morbid manifestations. There were no complications. Entirely favorable results were obtained also in the horses treated at a later stage. The course of the disease was the same as usual in the control horses injected with ordinary bouillon.

Blood Groups in Infants.—In only fifty-six of eighty-seven cases did the blood group of the infant correspond to that of the mother. Examination for agglutinogens and agglutinins was made in fifteen cases. In two-thirds of them the infant's blood corresponded to one of the four blood groups in adults. A total lack of agglutinins was noted in one third of the cases, a partial in one case. Their results correspond to those of Happ, and they disagree with Decastello and Sturli who believe that the appearance of agglutinins precedes that of agglutinogens. There may be a certain analogy between partial absence of agglutinins in the infant's blood and the "intermediary blood groups" in adults in which the characteristic group substances are partially lacking.

Experimental Hermaphrodism and Antagonism Between the Sex Glands.—Seemann inserted one or two ovaries in the abdominal muscles of three guinea-pigs with normal testes. A certain amount of suprarenal capsule extract was added to the food, from five days before the operation till fifteen days after it. The nipples increased in size and there was periodic secretion of milk from about four months after the transplantation. On necropsy the testes appeared intact, while the ovaries had undergone sclerotic degeneration. The longest period of observation was twelve months. It is possible that certain organs which seem to be related to the sexual glands, as, for instance, the suprarenal capsule, may induce a humoral condition similar to that after castration.

94: 1221-1280 (May 21) 1926. Partial Index

*Action of Insulin or Pituitary Extract on Respiratory Metabolism. C. Heymans and H. Pupco.—p. 1253.
Intravenous Versus Subcutaneous Injection of Insulin. Lamers.—p. 1259.

Antagonistic Action of Insulin and Pituitary Extract on **Respiratory Metabolism.**—Heymans and Pupco's experiments on rabbits showed that pituitary extract not only suppresses the hypoglycemia caused by insulin, but also increases the elimination of carbon dioxide, which is retarded in insulin hypoglycemia. The inhibiting influence on the action of insulin on glycemia and metabolism is, however, less pronounced from pituitary extract than from epinephrine.

Lyon Chirurgical

23: 273-428 (May-June) 1926

"Red" Myoma of the Uterus. M. Patel and A. Vachey.—p. 273.
*Phlebitis and Appendicitis. G. Bolognesi.—p. 290.
Putti-Parham's Osteosynthesis. F. Ody.—p. 296.
Secondary Osteomyelitis of the Skull. Gaillard and Mounier.—p. 334.

Inflammation of Left Femoral Vein and Appendicitis.—Bolognesi observed four cases of this phlebitis in 462 patients with appendicitis; namely, about 1.15 per cent. In two instances, the phlebitis followed an acute attack; in two, it occurred a few days after removal of the appendix for chronic appendicitis. The age of the patients ranged between 17 and 28; three were women. Tuberculous infection seems to have been a predisposing factor; the specific lesions preceded or coincided with the phlebitis in all. The anatomic condition of the left external iliac vein explains the more frequent occurrence of the phlebitis on the left side. The course of the vein is longer and more oblique on this than on the opposite side, and therefore the circulation is more likely to be sluggish here.

Presse Médicale, Paris

34: 849-864 (July 7) 1926

*Blood Transfusion After Roentgen-Ray Treatment. R. Benda and R. Le Clerc.—p. 851.

Blood Transfusion in Persons Treated with Roentgen Rays.—Benda and Le Clerc observed fatal shock following blood transfusion, although the preliminary test indicated compatibility of the bloods. This occurred in a cachectic woman, aged 68, with myeloid leukemia, treated first by roentgen rays (exposure of the spleen), later by injections of thorium X. It would seem that under the influence of the radiotherapy, the patient's blood may have acquired some abnormal properties, responsible for the misleading result of the test. The blood of thirty patients was examined before and from two to eight weeks after roentgen-ray treatment. In two, it changed from one group to another; these were patients with myeloid leukemia, whose spleen was irradiated. They emphasize that only the direct test of the blood by Jeanbrau's technic can avert errors in similar cases, testing serum from the donor in the presence of blood corpuscles from the receiver, and vice versa.

Revue Française de Pédiatrie, Paris

2: 1-124 (April) 1926

*Pyelitis in Infants. E. Gorter.—p. 1.
Blood Diseases in the New-Born. E. Stransky.—p. 26.
Blood Pressure in Children. L. Garot and Schwers.—p. 36.
*Sclero-Edema in the New-Born. P. Woringer.—p. 63.

Pyelitis in Infants.—Gorter states that there are no characteristic signs of the disease except excessive paleness and swelling of the face. It is the examination of the urine which resolves all doubts. The microbes in the urine belong chiefly to the paracolon bacillus group. It seems that the bacilli rarely penetrate into the renal pelvis by the urethral route, the infection being chiefly hematogenous. In his typical cases the pyelitis disappeared without any traces after one or two weeks. Coexistence of a congenital malformation in the urinary apparatus seemed to be responsible for the chronic form of the disease. The mortality was nil among the fifty-three children over one year; it did not pass 10 per cent in the sixty-one below this age. Large doses of alkaline citrates seemed to influence favorably the course of the pyelitis. Colon bacillus vaccines helped in certain cases, as well as daily irrigation of the bladder with a 0.1 per cent silver nitrate solution.

Localized Sclero-Edema in the New-Born.—Woringer has observed within the last three years six cases of sclero-edema of the suprapubic region, sometimes spreading to the external genitals, abdominal wall or thighs. The infants were all boys, born before term. The affection lasted from four weeks to five months. The prognosis is good; cure occurred without any treatment. No connection between the edema and an infection could be established; suppuration of the umbilical wound was noted in only one case, infection of the genital organs in none. No signs of syphilis could be detected. Thus the pathogenesis of the edema is still *obscure. It is elastic*, but not enough to retain the imprint of the finger.

Revue Neurologique, Paris

1: 513-720 (May) 1926

Pharmacologic Tests for Vegetative System. G. Marinesco and O. Sager.—p. 513.
*Lethargy in Tumor of the Infundibulum. A. Souques et al.—p. 532.
Double Idiopathic and Congenital Athetosis. L. Syllaba and K. Henner.—p. 541.
Postencephalitic Syndrome in Children. L. Tchlenoff and N. Toulaeva.—p. 563.

Lethargy as Isolated Manifestation of Infundibular Tumor.—Lethargy was the prevailing symptom in Souques, Baruk and Bertrand's fatal case of cancer localized in the infundibular recess of the third ventricle. The woman, aged 37, did not develop glycosuria or polyuria. The disease had started with melancholic depression, about six months before. This was soon followed by paroxysmal headache, with clonic contractions lasting for five minutes. The last two or three months the woman had periods of uncontrollable desire for sleep. The latter phenomenon, also diplopia and slight fever, appeared to justify the previous diagnosis of epidemic encephalitis. Lethargy, associated with disturbed nutrition, adiposis and Argyll Robertson pupil, was observed in another patient with syphilitic lesions of the third ventricle and at the base of the brain. Both cases seem to indicate that the region of the infundibulum and tuber cinereum may play a part in the regulation of sleep.

Schweizerische medizinische Wochenschrift, Basel

56: 633-656 (July 3) 1926

Paratyphoid and Enteritis. W. Silberschmidt.—p. 633.
Anatomy. H. Strasser.—p. 636.
*Return to Drugs. A. Tschirch.—p. 637.
*Standardization of Digitalis. A. Jaquet.—p. 639.
*Abscess of Lungs. O. Roth.—p. 641.
Arsphenamine Reagent. A. Hirsch.—p. 647.
Magnesium Sulphate. F. Paravicini.—p. 649.
Perineum Suture. H. Koller-Aeby.—p. 650.

Return to Drugs.—Tschirch has been pleading since 1909 for better knowledge and utilization of whole drugs.

Standardization of Digitalis.—Jaquet emphasizes the difficulties of biologic standardization. It gives only approximate results. The dosage varies individually in patients. The only important point is to prevent the sale of an inactive drug.

Abscess of Lungs.—Roth reports good results with Singer's method (restriction of fluids) in treatment of several patients with metapneumonic abscesses of the lungs. The secretion diminishes remarkably when the fluids are restricted temporarily to 400 cc. daily. It should not be forgotten that fruits consist chiefly of water.

Archivio Italiano di Urologia, Bologna

2: 517-628 (May) 1926

*Hypernephromas. G. Tarozzi and E. Forti.—p. 517.
*Kidney Tumor with Congenital Syphilis. R. Rinaldi.—p. 582.
*So-Called Essential Hematuric Nephritis. P. Barco.—p. 602.
Case of Kinking of Ureter. I. Barcaroli.—p. 615.
*Spinal Anesthesia in Urology. R. Broglio.—p. 621.

Hypernephromas.—Tarozzi and Forti conclude from their study of the literature on hypernephroid tumors of the kidneys that Grawitz' theory as to their suprarenal origin applies at most only to certain rare, circumscribed forms. In a case they describe, the growth had invaded the vena cava and right auricle. They compare with this a case of renal adenocarcinoma, insisting on the identical results of cytologic and histologic examination in the two. Eleven photomicrograms confirm this.

Kidney Anomalies in Congenital Syphilis.—Rinaldi states that the nephrectomy was borne well by the girl, aged 16, whose adenosarcoma of embryonal type had developed rapidly. The kidney vessels and connective tissue showed also chronic lesions of inflammatory nature from the congenital syphilis.

Hemorrhagic Nephritis.—The hematuria was the only symptom in Barco's case, but nephrectomy revealed diffuse although minimal lesions, evidently of infectious-toxic origin. The intense hematuria, a minute tuberculous process in the lung and the failure of medical measures justified removal of the organ. The man, aged 31, returned a year later, with hematuria as before, and the pulmonary process more advanced.

Spinal Anesthesia in Urology.—Broglio reports seventy-six completely successful applications of spinal anesthesia in eighty operations on the urogenital apparatus. A rise in temperature was noted in sixty-nine patients, four had mild headache, seven vomited, and in two cases there was retention of urine for one day and nine days.

Riforma Medica, Naples

42: 601-624 (June 28) 1926

Typhoid Fever. A. Barlocco and B. Bisbini.—p. 601.
*Pneumothorax and Laryngeal Tuberculosis. P. Russi.—p. 605.
Suicides in Children. F. P. Annecchino.—p. 614.
*Pseudoperitonitis from Ascarides. E. Capecchi.—p. 619.

Pneumothorax and Laryngeal Tuberculosis.—Russi finds artificial pneumothorax a valuable weapon in treatment of laryngeal tuberculosis unless it has progressed too far.

Pseudoperitonitis from Ascarides.—Capecchi made an exploratory laparotomy in a young woman who had been suffering for a year from pains localized around the navel and had lost considerably in weight. The disturbances were due to the presence of ascarides, and disappeared after administration of santonin.

Brazil-Medico, Rio de Janeiro

1: 305-316 (June 12) *1926*

The Teaching of Therapeutics in Brazil. F. São Paulo.—p. 305.
*Meningitis from Helminthiasis. A. Valerio.—p. 309.
Asthma and Its Treatment. Segard.—p. 310.

Ascarid Meningitis.—Valerio's case confirms the possible action of ascarid toxins in inducing convulsions, paralysis and injury of the blood. The boy, aged 6, presented the complete picture of grave meningitis, with diarrhea, but all the symptoms subsided under treatment of the helminthiasis. Ascarids had been found in both vomit and stools, and in the latter also tenia segments and trichocephalus.

Revista de la Soc. Arg. de Biología, Buenos Aires

2: 1-112 (April) 1926

Immunity in Neurotropic Ectodermoses. R. C. Biglieri.—p. 5.
*Electrodialysis of Serums. R. Wernicke and F. Modern.—p. 16.
*Yohimbin and Nicotine. B. A. Houssay and E. A. Molinelli.—p. 26.
*Spontaneous Chagas' Disease in Dog. S. Mazza.—p. 33.
*Scarlet Fever Toxin. J. M. Miravent and E. Chiodi.—p. 42.
Gastric Lipomas. A. E. Bianchi.—p. 47.
*Hyperplasia of Glands in the Pylorus. C. M. Ramirez Corria.—p. 56.
Chagas' Disease in an Argentine Woman. S. Mazza.—p. 79.
Staining of Microfilaria. Brachetto-Brian.—p. 88.
Malformation of Pulmonary Artery. A. A. Robles.—p. 91.
*Kala-Azar in Children. S. Mazza and J. Cornejo Arias.—p. 96.
*Insulin and the Parathyroids. M. A. Magenta.—p. 102.

Electrodialysis of Antitoxic Serums.—Wernicke and Modern succeeded with electrodialysis in precipitating out the active globulins in diphtheria and tetanus antiserums. The antitoxic fraction necessarily accompanies them. The antiserum is diluted 20 per cent, and certain salts are added, according to Pauli's method.

Action of Yohimbin on the Splanchnic Nerves and of Nicotine on Secretion of Epinephrine.—Houssay and Molinelli relate that yohimbin checks the blood pressure-raising action from stimulation of the splanchnic nerve. It also reduces and inverts the pressure-raising action of nicotine, and checks almost completely the epinephrine-secreting action of stimulation of the splanchnic nerve or injection of nicotine.

Spontaneous Infection of the Dog with Schizotrypanum Cruzi.—Mazza remarks that the case reported is the first recorded instance of spontaneous infection of a dog with the agent of Chagas' disease. Nine species of the triatoma intermediate host insect are known in Argentina.

Scarlet Fever Toxin.—Miravent and Chiodi have prepared a toxin for the Dick test and worked out a method for standardization. Heating the toxin to 105 C. for an hour yields less false reactions than when the heating is only to 90 C. for an hour.

Hyperplasia of Pyloric Glands.—Ramirez Corria believes that he has demonstrated the presence of embryonal germs of glands of the type of Brunner's glands in the walls of stomachs with pathologic processes, adenomas, ulcer or cancers. The irritation from the pathologic process induces a reaction on the part of these embryonal glands, and they enlarge, forming patches of hyperplasia. His photomicrographs show this plainly and that there is no tendency to a neoplasm.

Kala-Azar in Argentina.—The two cases described, in children aged 5 and 9, are the first to be published in Argentina of autochthonous infantile kala-azar. The diagnosis was aided by the irregular outline of the hypertrophied spleen, its hardness and resistance, and lack of tenderness. The hypertrophied spleen of malaria, on the other hand, enlarges evenly, losing its original lobulation. The lack of any influence from quinine and the prompt improvement under antimony and potassium tartrate confirmed the diagnosis.

Insulin and the Parathyroids.—Magenta has been investigating on parathyroprival dogs and rats the possible influence of the parathyroids on insulin hypoglycemia. Dogs with pronounced tetany were more sensitive to the toxic and convulsion-inducing action of the insulin, but those without tetany responded to the insulin like normal dogs. Rats did not seem to be affected either way by removal of the parathyroids, so far as insulin was concerned.

Siglo Médico, Madrid

78: 25-48 (July 10) 1926

Immunity in General. Martin Salazar.—p. 25.
*Posttyphoid Myocarditis. G. R. Gonzalo.—p. 26.
The Modern Serology of Syphilis. E. Meinicke.—p. 28.
Peptic Ulcer and the Mechanism of Its Cure by Gastro-Enterostomy. J. Luna Gañán.—p. 30. C'tn.

Treatment of Posttyphoid Myocarditis.—Gonzalo remarks that the treatment must vary according to the stage of the typhoid infection at which the myocarditis develops. At the height of the infection, in addition to the usual measures to combat the typhoid, especial care must be taken to avoid straining the heart in any way; the circulation should be promoted, and kidney and skin functioning stimulated, refraining from strong heart stimulants except in extremely severe cardiac insufficiency, as they might easily have a fatal effect. On the other hand, the acute phase of the typhoid once past, there is not so much danger from heart tonics. In spite of every care, the heart may weaken beyond recuperation during the height of the disease or in convalescence, either from acute dilatation or as heart failure, and the family should be warned of the danger, and be instructed in the emergency measures required.

Archiv für Psychiatrie und Nervenkr., Berlin

77: 321-506 (June 20) 1926. Partial Index

*Typhus Complications in the Central Nervous System. P. M. Feldmann. —p. 357.
Intraspinal Insufflation of Air to Relieve Neuritis Pains. M. Fischer. —p. 445.
Single Virus in General Paralysis. G. C. Peracchia.—p. 494.

Nervous Complications of Typhus.—During the typhus epidemics in Russia (1920-1921) Feldmann studied twenty-eight cases of hemiplegia, eighteen cases of disseminated encephalitis, four cases of disease of the spinal cord and one case of acute hydrocephalus, as complications of typhus. The intensity of the nervous symptoms did not correspond to the severity of the typhus fever in the patients. The motor disturbances were of the hemiplegia or hemiparesis type in 73 per cent. The facial nerve was usually affected. Brain diseases were more common than diseases of the spine. These complications were extremely persisting, especially those of the medulla. Speech disturbances were the bulbar symptom which persisted longest.

Deutsche medizinische Wochenschrift, Berlin

52: 1069-1112 (June 25) 1926

Semicentennial of the Reichsgesundheitsamt. B. Möllers.—p. 1069.
Disinfection of Sputum. Konrich.—p. 1073.
*Syphilitic Infection. W. Kolle and E. Evers.—p. 1075.
*Precipitin Serums. W. Gaehtgens.—p. 1076.
Standardization of Vaccine Virus. K. Arnold and M. Kopp.—p. 1079.
*An Injurious Floor Wax. J. Geppert.—p. 1080.
Biologic Standardization in Russian Pharmacopeia. O. Steppuhn.—p. 1081.
*Addiction and Suicide. E. Joël.—p. 1082.
Venereal Diseases in Children. W. Grumach.—p. 1084.
Experts in Occultism. A. Hellwig.—p. 1085.
*Human Body and Phylogenesis. H. Münter.—p. 1087.
Venereal Diseases in Children. H. Davidsohn.—p. 1090. C'td.
*Competition in Lowest Death Rate. E. Roesle.—p. 1092.
Social Insurance. Fuisting.—p. 1094.

Syphilitic Infection.—Kolle and Evers found spirochetes in inguinal lymph nodes of rabbits in amounts sufficient for infection of other rabbits as soon as thirty minutes after rubbing the infectious material for one minute into the scratched skin of the scrotum. The distance from the point of infection to the lymph nodes was about 6 cm. Similar experiments on guinea-pigs revealed spirochetes in the lymph nodes as early as five minutes after infection. Recurrens spirochetes and trypanosomes invade the lymph glands within two minutes. It is therefore evident that any attempt at local disinfection after the intercourse has very little chance of success. It is better to administer a strong dose of arsphenamine intravenously.

Precipitin Serums.—Gaehtgens recommends immunization with a mixture of the serum with lipoids extracted from the meat of a species different from the one the serum of which is used for injection. This method seems to induce formation of stronger antiserums than the injection of the serum alone. When using lipoids extracted from the same species as that of the serum injected, he obtained less specific precipitins.

An Injurious Floor Wax.—Geppert warns against sleeping in a room which smells strongly of floor wax or oil paint. Poisonings occur in such rooms.

Addiction and Suicide.—Joël deals with the common psychopathic root of the drug addiction and of the tendency to self-annihilation; the attitude of addicts shows a great indifference toward their progressive destruction. They even regard a partial loss of their faculties, especially of the sexual, as an advantage. Their hostile attitude toward life is similar to that of the Russian religious sect of Skoptzi, who castrate themselves, as well as abstain from alcohol. In other groups excessive sexual activity evidently has a similar purpose of self-annihilation. The large percentage of the homosexual among addicts is another indication of the close relationship between anomalies of the sex instinct, addiction to drugs, and tendency to suicide. Passionate gambling is also frequently an equivalent of suicide. The churchyards of Monte Carlo do not show necessarily that the gamblers had no other choice left except to kill themselves. At least part of them had been potential suicides when they came to gamble.

The Human Body and Phylogenesis.—Münter shows in detail on the human skeleton the evidences of phylogenesis. Some of the differences between the skeleton of man and of lower animals are acquired after birth. This applies especially to the curvature of the lumbar spine and the adult form of the pelvis. Man is the only animal which does not possess at birth the same attitude of the limbs as his parents. Outside of the atavistic formations, there are some anomalies of a progressive nature which indicate the probable future development of man.

Competition in Minimum of Mortality.—Roesle reviews the European statistics. The Dutch mortality of 9.8 is the best European minimum. The world record is kept by New Zealand with 8.3. The birth rate has declined rapidly in the northern countries. Sweden, Esthonia and England and Wales have recently dropped even below France with her 19.2 natality. The infant mortality is very low in Norway, Sweden and Holland (below 6). The decrease of tuberculosis mortality has stopped in England and Holland. The tuberculosis death rate is increasing lately in Denmark.

Klinische Wochenschrift, Berlin

5: 1161-1208 (June 25) 1926

Heredity in Otology. W. Albrecht.—p. 1161.
*Weil's Disease. II. Uhlenhuth and H. Grossmann.—p. 1163.
*Transplantation of Human Cancer. H. Kurtzahn.—p. 1166.
*Degkwitz' Measles Serum. C. Noeggerath et al.—p. 1168.
*Roentgen Diagnosis of the Duodenum. O. David.—p. 1174.
*Active Serums in Diagnosis. C. Bruck et al.—p. 1176.
Sanocrysin in Pulmonary Tuberculosis. Jansen and Weber.—p. 1179.
*Shock Treatment and Peripheral Nerves. Kauders and Stransky.—p. 1182.
*Biology of the Skin. R. Hauptfeld.—p. 1184.
Rigidity from Choking. W. Blume.—p. 1185.
*Blood Groups in Psychiatry. Gundel.—p. 1186.
Peripheral Sensory Paralysis. P. Matzdorff.—p. 1187.
*Goat's Milk in Infant Feeding. H. Behrendt.—p. 1187.
Periodic Examinations. A. Korach.—p. 1191.
Ergotamine in Epilepsy. Von Lebinski.—p. 1206.
Skin Reaction to Adhesive Plasters. Seeliger.—p. 1207.

Weil's Disease.—Uhlenhuth and Grossmann found probable serologic differences in spirochetes obtained from different patients with Weil's disease. There are unquestionable serologic differences in rats' spirochetes which are pathogenic for guinea-pigs. These facts strengthen their opinion that *Spirochaeta icterohaemorrhagiae* is a variation of saprophytic spirochetes living in the water.

Transplantation of Human Cancer.—Kurtzahn had transplanted upon himself pieces of a breast cancer immediately after their removal from a patient. The implants became rapidly—within six days—necrotic. He concludes that homoplastic transplants of human cancer behave like homoplastic transplants of normal epithelium. They induce no histologic reaction exceeding that which occurs after implantation of any tissue foreign to the body. It is possible that a transplant of cancer to other cancer patients might succeed, but this experiment cannot be made on human beings.

Degkwitz' Measles Serum.—Noeggerath, Oster and Viethen emphasize the need, as well as the technic, for ample controls in testing the preventive action of serums, and conclude from very exact observations that the Degkwitz serum obtained from sheep injected with alleged measles virus is without action if injected before infection. When injected at the time indicated by Degkwitz, it seems to have had an unfavorable effect. They suggest that Degkwitz should publish his method of production and testing of the serum, and that it should be taken off the market.

Roentgen Diagnosis of the Duodenum.—David recommends direct filling of the duodenum with the contrast substance in roentgen diagnosis.

Active Serums.—Bruck, Behrmann and Rosenberg had excellent results in syphilis and gonorrhea with a modification of the Hecht method. With comparatively large amounts of serum, it is superior to the classical technic. Infants have not enough hemolytic amboceptor, and have to be tested with the classical method.

Shock Treatment and Peripheral Nerves.—Kauders and Stransky poisoned guinea-pigs with lead, and injected them with small amounts of milk. These animals lived longer than the controls poisoned with lead, and the changes in the peripheral nerves were less pronounced.

Biology of the Skin.—Hauptfeld was unable to confirm Vollmer's observation on lowering of the acidity of the urine by intracutaneous injections of physiologic solution of sodium chloride.

Blood Groups in Psychiatry.—Gundel found group III comparatively more frequent in mental diseases than in other patients.

Goat's Milk in Infant Feeding.—Behrendt warns against feeding young infants exclusively with goat's milk. It is dangerous even as an addition to human or cow's milk. Feeding of goats with green fodder diminishes the danger a little.

Medizinische Klinik, Berlin

22: 1023-1060 (July 2) 1926

*Cancer of Breast. H. Schloffer.—p. 1023.
*Drinking of Electrolytes. W. Arnoldi and H. Zimmermann.—p. 1029.
Tuberculosis of the Kidney. J. J. Stutzin.—p. 1032.
Bismuth as Diuretic. W. Robitschek.—p. 1034.
Epidemiology of Influenza. E. Kindborg.—p. 1039.
*Fissure of Anus. S Rechnitzer.—p. 1039.
Effusions in Joints. Von Grosschopff.—p. 1040.
Sedimentation and Mátéfy Reaction in Tuberculosis. P. Sedlmeyr.—p. 1040.
Malaria Psychosis as War Injury. Von Schnizer.—p. 1045.
Carbon Dioxide Baths. Schmeidler.—p. 1046.

Cancer of Breast.—Schloffer enumerates the blunders made in treatment of cancer of the breast. Delaying the intervention until the diagnosis is disastrously sure, is one of them; exploratory excision of small pieces—which leads easily to metastasis—is another. The diagnosis should be made from a frozen section during the intervention. Another avoidable blunder is removal of the breast alone, without sacrificing the muscles and all the accessible lymph nodes—including the supraclavicular in slender patients. Local recurrences of the cancer are due either to opening of the cancer tissue and direct inoculation, or to the desire to avoid the necessity for transplantation of skin flaps to cover the defect. It is pathetic to hear some of these patients recall gratefully how rapidly and nicely the wound had healed.

Rapid and Slow Drinking of Electrolytes.—It is a well known fact that the effects of mineral waters depend partly on circumstances which would not seem essential. Arnoldi and Zimmermann investigated the influence of the rapidity of the drinking on the effects of a water containing chiefly sulphates, lithium and sodium chloride (Salzschlirf). Rapid drinking (750 cc. within fifteen minutes) accelerated the extrarenal, slow drinking (one hour) the renal elimination of waste products and acid. The bowels moved soon after the rapid intake, which also preserves the alkali and phosphates, and causes a transitory increase of the alkali reserve of the organism; slow drinking has the opposite action. Slow drinking did not change the blood sugar concentration; rapid drinking caused hyperglycemia.

Fissure of Anus.—Rechnitzer extols the curative value of Peruvian balsam. It acts well also in any other fissures of the skin (nipple, fingers, etc.).

Mitteil. a. d. Grenzgeb. der Med. und Chir., Jena

39: 163-296, 1926

Inferiority from Erect Gait. R. J. Harrenstein.—p. 163.
*Peptic Ulcer. H. Lehmann.—p. 185.
*Tuberculosis of the Stomach. E. Melchior.—p. 205.

*Prognosis in Cholelithiasis. P. Jaguttis.—p. 255.
*Splenectomy in Hemolytic Jaundice. Jacobi and T. Naegeli.—p. 270.
*Acanthosis Nigricans and Cancer. H. Küttner.—p. 276.

Peptic Ulcer.—Lehmann found a chronic peptic ulcer of the stomach or duodenum, or a scar from such, in 20.2 per cent of his 1,000 necropsies. The stomach was affected two and a half times more frequently than the duodenum. There were nine times more scars than ulcers in the stomach. The majority of the scars were localized in the cardiac half of the middle part of the stomach. Most of them affected the lesser curvature. These ulcers have a better healing tendency than those which are near the pylorus. The duodenal ulcers have a good healing tendency. However, perforation is frequent in those which are situated in the anterior wall.

Tuberculosis of the Stomach.—Melchior points out that although the stomach has a decidedly better resistance to tuberculosis than the rest of the digestive tract, tuberculosis of the stomach is by no means as rare as commonly assumed. The diagnosis is difficult, and frequently is made only by the histologic examination. Resection is the method of choice. Pulmonary tuberculosis should not be a contraindication against surgery of the stomach; quite the contrary, the surgical intervention is of vital importance because of the unfavorable influence of disturbed digestion on the pulmonary process.

Prognosis in Cholelithiasis.—Jaguttis investigated the fate of 260 patients who had been treated at the Internal Clinic at Königsberg in the years 1900-1914. He concludes that there is no reason to widen the present indications for surgical treatment of gallstones, and especially that a trial of conservative treatment is just as advisable as before. Only about one half of the patients have their first attack before they are 40 years of age. After this age, the danger of surgical intervention is considerable. He mentions the favorable influence of large amounts of berries (currants in one case) when regularly taken.

Splenectomy in Hemolytic Jaundice.—Jacobi and Naegeli warn against roentgen irradiation of the spleen in hemolytic jaundice. It may entail adhesions that may cause difficulties in splenectomy, which is the only rational treatment.

Acanthosis Nigricans.—Küttner does not regard acanthosis as an absolute indication for exploratory laparotomy, since a tumor was found in only 45 per cent of the cases. If the patient is young and suffers from familial obesity or diabetes, or other disturbances of development, the acanthosis may be idiopathic. Laparotomy should be considered seriously in every other case. Acanthosis is characterized mainly by a pigmentation and papillary condition of the skin.

Monatsschrift für Kinderheilkunde, Leipzig

32: 387-514 (June) 1926

Vienna Institute for Welfare Work for Mothers and Children. L. Moll. —p. 387.
*Heating Screen in Skin Diseases. M. Allina.—p. 400.
Recuperation and Tuberculosis. H. Eberhartinger.—p. 404.
Nutrition in Atrophic Infants. J. Franke and A. Wittenberg.—p. 413.
Nervous Anorexia. O. Loewy.—p. 421.
*Casein-Free Diet in Diarrhea. L. Moll.—p. 428.
Erysipelas. J. Raimann.—p. 446.
*Feeding of Children. E. Stransky.—p. 450.
Microdetermination of Fat in Milk. L. Tavs.—p. 487.
Spirilla in Diarrhea. A. Trias.—p. 491.
Gonorrhea in Children. F. Wengraf.—p. 503.
Microdetermination of Milk-Sugar in Milk. A. Wittenberg.—p. 510.

Heating Screen in Skin Diseases.—Moll devised a treatment of eczema and pyodermia in infants by a screen containing electric lamps. Allina reports good results, but warns against the possibility of overheating the infant. Dermatoses of the face and scalp are not suitable for this treatment.

Casein-Free Diet in Diarrhea.—Moll recommends exclusion of casein from the diet in grave diarrhea. The return to milk should start cautiously, with gradually increasing amounts.

Feeding of Children.—Stransky ascertained the voluntary food intake in a group of children between the ages of 1 and 6 years. The food requirement is about 110-120 calories per kilogram of body weight. The optimum composition was 15 per cent proteins, 35 per cent fat and 50 per cent carbohydrates. The poor eaters prefer concentrated food rich in protein and fat. The intervals between the meals should be about four hours. A pint of milk daily is sufficient. Poor eaters should be allowed still less.

Wiener klinische Wochenschrift, Vienna

39: 741-772 (June 24) 1926

*Goiter and Cretinism. A. Kutschera-Aichbergen.—p. 741.
*Serotherapy of Viper Bites. R. Kraus.—p. 744.
*Preapoplectic Loss of Tonus of Vessels. V. Kollert.—p. 745.
Alleged Inversion of Duodenum. E. Pernkopf.—p. 746.
*Retinitis Pigmentosa with Tuberculosis. A. M. Rosenstein.—p. 749.
*Conjunctiva in Arsphenamine Intolerance. S. Szandicz.—p. 751.
*Ephedrine. L. Pollak and W. Robitschek.—p. 753.
*Treatment of Peptic Ulcer. A. Eiselsberg.—p. 755. C'cn.
Digestion and Dermatosis. S. Ehrmann.—p. 756.
Protein Treatment of Diabetes. G. Singer.—p. 757.
Rheumatism of Menopause. J. Bauer.—p. 758.
Results of Acute Nephritis. P. Saxl.—p. 759.
Therapeutic Collapse. A. V. Frisch. Supplement.—pp. 1-18.

Goiter and Cretinism.—Kutschera-Aichbergen regards both goiter and cretinism as manifestations of an endemic dystrophy which also causes other anomalies, found frequently in the same regions. Mongolism, nanosomia, chondrodystrophy, heart changes and many stigmata may be classed under the same heading. His personal experience in regions of endemic goiter—including the treatment of over 1,600 patients—convinced him that the disturbance of the thyroid cannot be the cause of cretinism which is not a simple deficiency of the thyroid, such as myxedema. Not one complete success had been obtained by him in any case of true cretinism. Especially the idiocy remained practically the same. The improvements were limited to an increased vivacity and to growth of bones. The goiter and hypothyroidism usually followed the idiocy which had frequently begun after a fever. In the families there was rarely more than one child who was a typical cretin, but most of the other children presented various anomalies, including idiocy. A large percentage of the population of such districts seems to be degenerate. The reaction to external impressions is very sluggish, although these people are not hypothyroid. It takes such a man a long while before he finds his purse and takes out the money to pay for his street car ticket. Many of them present an enormous number of flea bites on the skin. This phenomenon, called by the author purpura pulicosa, is due to the fact that the small hemorrhage caused by the flea bite requires from four to six weeks for resorption instead of the normal twenty-four to forty-eight hours. Difficult pronunciation is surprisingly frequent in seemingly normal people from such districts.

Serotherapy of Viper Bites.—Kraus' results indicate that the South American antibothrops serum might be of value in treatment of people bitten by the European viper (*Vipera aspis*).

Preapoplectic Loss of Tonus of Vessels.—Kollert observed three patients with hypertension who saw red before a cerebral hemorrhage. In one of them he came in time to make a preventive venesection, but the patient succumbed five months later to another attack which had also been announced by the same symptom. He explains it by dilatation of the blood vessels of the retina parallel with a dilatation of the cerebral blood vessels. According to Westphal, the apoplectic hemorrhage arises after a period of contraction of the cerebral arteries, when they again become dilated.

Retinitis Pigmentosa with Tuberculosis. — Rosenstein observed retinitis pigmentosa and pulmonary tuberculosis in three brothers whose parents were cousins. All the ancestors, as far as she could ascertain, were healthy peasants.

Conjunctiva in Arsphenamine Intolerance.—Szandicz confirms the occurrence of hyperemia of the conjunctiva immediately after injection of arsphenamine in patients who are hypersensitive to it. The redness was limited to one eye and lasted about fifteen minutes in his case. He attributes persistent pains in the joints in his patient to the arsphenamine intolerance.

Ephedrine.—Pollak and Robitschek confirm the favorable action of 0.1 Gm. ephedrine hydrochloride taken by mouth in asthma patients.

Treatment of Peptic Ulcer.—Eiselsberg reviews the history and his personal experiences in surgical treatment of ulcers of the stomach and duodenum. Billroth felt very badly when the histologic examination in his fifth or sixth resection of the stomach revealed only an ulcer scar instead of the expected scirrhus. His respect for any organ was so great that he was conscience stricken for having removed a part of a noncancerous stomach. The patient, however, felt well until he died five years later from a hemorrhage originating in another small ulcer. Eiselsberg has had 3 per cent mortality in the last 449 cases of resection of the stomach for ulcer. He considers this as 3 per cent more mortality than there should be. He thinks that at present the respect for the stomach is very low. He doubts whether resection will remain the method of choice in treatment of ulcers, as it is now. He would not mind the discovery of some internal treatment which would make this interesting chapter of surgery superfluous.

Zeitschrift für die ges. exp. Medizin, Berlin

50: 297-623 (May 25) 1926. Partial Index

Biology of the Skin. VII. E. Edelstein and H. Vollmer.—p. *297.*
Colon Bacillus Agglutination. Pesch and Simchowitz.—p. 301.
Internal Secretion of the Sex Glands. E. Kylin.—p. 318.
*Action of Atropine on the Large Intestine. H. S. Lurje.—p. 339.
Donders' Venous and Arterial Pressure. Rehfisch.—p. 359.
Protein and Creatinin Metabolism After Splenectomy. Weicksel.—p. 415.
*Anaphylaxis and Roentgen Irradiation. Klewitz and Wigand.—p. 427.
Experiments with Rhodan Salts. L. Takács.—p. 432 and 440.
Microanalysis of Blood Serum Albumin. Petschacher et al.—p. 449.
Sensitivity of Tympanic Membrane and Cavity. Manasse.—p. 477.
Physical Bases of Electrocardiography. F. Schellong.—p. 488.
Potential Energy of Food in Childhood. E. Helmreich.—p. 587.
Leukocytosis and Hypertonia from Epinephrine. H. Baar.—p. 594.
Nestle's Infant Food and Scurvy in Guinea-Pigs. A. Lüüs.—p. 610.
Water and Alcohol as Stimuli for Gastric Secretion. J. Vándorfy and M. v. Várady-Borbély.—p. 615.
Blood Transfusion and the Spleen. H. Vollmer and J. Serebrijski.—p. 621.

Action of Atropine on the Large Intestine.—In a series of ver fifty experiments on cats, Lurje found that atropine njected into the blood or subcutaneously caused relaxation of he spastically contracted large intestine. Atropine had no nfluence on tonus and contractions when introduced directly nto the intestine or stomach. The effect of the drug was the ame whether the connection of the loop in question with the entral nervous system was interrupted or not. In therapeutic use, atropine should be administered intravenously or subutaneously; when rapid action is desired the former method s preferable.

Anaphylaxis and Roentgen Irradiation.—In experiments on hirty guinea-pigs, Klewitz and Wigand found that roentgen rradiation neither prevented nor influenced anaphylactic shock. In commenting on the relation of these experiments to bronchial asthma, they point out that the clinical results of roentgen irradiation in the latter suggest that conditions may be present there which are not found in anaphylactic shock, and which make it more susceptible to the action of the rays.

Influence of Blood Transfusion on the Size of the Spleen.—Vollmer and Serebrijski found that intraperitoneal blood transfusion in the rabbit is followed by enlargement of the spleen. This enlargement is brought about by way of the lymph channels between the peritoneum and the spleen. Intravenously transfused blood caused no increase in the weight of spleen or liver. In the case of the intraperitoneal transfusions, the animals were killed two days after the last of four transfusions, carried out within eight days, and the organs were examined within a few hours. The animals transfused intravenously were killed one hour or less after the transfusion, and the organs examined two or four hours after death.

Zentralblatt für Gynäkologie, Leipzig

50: 1553-1616 (June 12) 1926

*Ninhydrin Flocculation Test for Pregnancy. W. Vogel.—p. 1554.
Virulence of Streptococci. F. Baake.—p. 1561.
*Streptococcus Serotherapy and the Blood Picture. Lehfeldt.—p. 1564.
Multiple Krompecher Carcinoma of the Vulva. N. Temesváry.—p. 1575.
*Elderly Primiparas. G. Lundh.—p. 1582.
Legalized Interruption of Pregnancy. A. Niedermeyer.—p. 1585.
Pregnancy Occurring in Amenorrhea. L. Flory.—p. 1591.
Perforation of the Uterus. W. Buschmann.—p. 1592.
Sedimentation Test in Gynecologic Diseases. I. J. Iwanow.—p. 1600.

Ninhydrin Flocculation Test for Pregnancy.—To prepare a "standard solution," Vogel dissolves 2.5 Gm. of bicarbonate of potassium in 945 cc. of distilled water and adds thereto 55 cc. of official lime water solution. A ten liter bottle is filled with carbon dioxide, the air being almost entirely driven out of the bottle. The solution is now poured into this bottle and the whole well shaken. Ten cubic centimeters of this "standard solution," to which are added 1.75 cc. of serum and 0.2 cc. of a 1 per cent aqueous ninhydrin solution, is boiled in a water bath for three minutes. If the serum is from a nonpregnant woman, the albumin separates in coarse, grayish white shreds; if it is from a pregnant woman, the albumin remains in suspension or, in early pregnancies, very fine blue flakes appear. This test was positive in 97.8 per cent of 281 cases of pregnancy. In 212 nonpregnant women, it gave a negative reaction in 97.7 per cent. In the first three months of pregnancy the test proved reliable in only 75 per cent of cases. He holds that this test, so simple that it can be carried out by the general practitioner in his own office, is at least as reliable as the best serologic tests for pregnancy which we possess.

Blood Picture in Streptococcus Serotherapy.—About two days after treatment with antistreptococcus serum, Lehfeldt saw regression of the phenomenon of shifting to the left, a reappearance of the eosinophils, and a rise in the relative number of lymphocytes in patients with puerperal and surgical sepsis. A similar blood picture followed antistreptococcus serum injection in mice with experimental streptococcus infection. He affirms that the blood picture changes can be used as a test for the favorable influence of the serotherapy in the individual case.

Elderly Primiparas.—In a material of 976 primiparas between 30 and 47 years of age, Lundh found that the duration of labor was longer and the number of cases of eclampsia and of delivery by forceps greater in those married longer than two years than in the unmarried and those married less than two years.

50: 1681-1744 (June 26) 1926

Results of Dienst's Pregnancy Test. K. Fink.—p. 1681.
Placenta Adherent Over Interstitial Myomas. A. Ecke.—p. 1688.
*Peritonitis After Cesarean Section. H. Schultheiss.—p. 1696.
High, Transverse Subcutaneous Incision. O. P. Mansfeld.—p. 1701.
*Cure of Primary Sterility. F. Isbruch.—p. 1705.
Technic of Tubal Sterilization. H. Peitmann.—p. 1720.
Examining for Fetal Position, etc. A. Hochenbichler.—p. 1721.
Autohemotherapy in Vomiting of Pregnancy. A. I. Malinin.—p. 1729.

A Rare Cause of Peritonitis Following Cesarean Section.—Schultheiss describes two fatal cases of peritonitis following transperitoneal cesarean section, in which the portal of entry of the micro-organisms was found to lie in necrosis of the uterine wall in the region of the cervix, caused by the pressure of the head. The risk which injured soft parts present in this respect should be given consideration in deciding the time for cesarean section in labor rendered difficult by disproportion between head and pelvis.

Operations on Ovary and Tube to Relieve Sterility.—Isbruch was able to check up on forty-one of seventy-two primarily sterile women who were operated on by interpolar resection of the ovary for partial cystic degeneration of the organ or by a plastic operation for stenosis of the fallopian tube. In 43.9 per cent of these, pregnancy had ensued. Nineteen living children had been born, five pregnancies were still in progress, and there had been two abortions. Eleven of the women who became pregnant were between 27 and 36 years of age. One had been married for thirteen years.

Mikrobiologicheskiy Jurnal, Leningrad

2: 157-260, 1926. Partial Index

*Local Immunization of the Cornea. Kisin and Bazilevskaya.—p. 157.
Antivirus Treatment of Postpartum Affections. P. D. Tron.—p. 170.
Oral Immunization Against Cholera. Gorovits-Vlasova and Pirozhnikova.—p. 180.

Immunization of the Cornea by Besredka's Method.—Kisin and Bazilevskaya injected pneumococcus antivirus filtrate into one eye in eighteen guinea-pigs. Both corneas were infected one or two days later. The course of this experimental keratitis was notably milder in the vaccinated eye. Analogous experiments were made with staphylococcus antivirus in nine guinea-pigs. The results were positive, except in one. A bilateral keratitis was induced in three guinea-pigs, and then one eye was treated by subconjunctival injections of staphylococcus antivirus. In two animals, regression of the morbid process started by the third day in the treated eye, while in the untreated eye it did not begin until the fifth day. The immunity is evidently purely local, not being conferred on the other eye.

Russkaya Klinika, Moscow

5: *631-776* (May) 1926. Partial Index

Septic Infection. A. Gubareff.—p. 641.
*Ferment Treatment in Children. A. Tur.—p. 656.
Latent Tuberculosis and Pregnancy. K. Punin.—p. 674.
*The Skin Test with Induced Pneumothorax. V. Ioffe.—p. 688.
Blood Changes in Diabetes. Tsukershtein and Shtraikher.—p. 698.
Influence of Ultraviolet Rays on the Skin. S. Vail.—p. 720.
The Lymphatic System in Cancer. B. Rogalsky.—p. 727.
Hemophilic Joint Lesions. B. Petroff and A. Remizoff.—p. 742.

Ferments in Treatment of Young Children.—Research was made on children, aged from over 6 weeks to 12 years, with acute or chronic disturbances of nutrition or digestion. The usual doses seem to be too small, and this may be responsible for the frequent failure of the treatment. Tur prescribes a single dose of 0.5 Gm. of pepsin in 10 cc. of a decinormal hydrochloric acid solution, for infants, and 1 Gm. or more, in from 15 to 30 cc. of the same solution, for older children. The pepsin is given before or with every feeding. A single dose of 0.1 or 0.15 Gm. of pancreatin or diastase in a 1 per cent solution of calcium lactate, is given to infants, in the first months of life, and 0.2 or 0.3 Gm. to older infants, with every feeding or immediately after. The digestive potency of the gastric and duodenal juices seems to increase notably under the pepsin treatment. Pancreatin and diastase may enhance the splitting of proteins, fats and carbohydrates in the stomach, if the gastric juice is but slightly acid. Besides this, they considerably increase the amylolytic, lipolytic and tryptic action of the duodenal juice. Tur says that the results from this method of ferment therapy were encouraging in his seventeen cases.

Testing the Effect of Pneumothorax in Tuberculosis.—Ioffe emphasizes that the Pirquet tuberculin skin reaction may indicate whether the artificial pneumothorax will be of benefit or not. The reaction reveals the condition of immunity in the tuberculous patient, and may also show the influence of the pneumothorax before there are any clinical changes. If the tuberculin test does not change in the course of the pneumothorax, no favorable clinical results can be expected. If the reaction is negative or is getting weaker, the prognosis is unfavorable. On the other hand, it is good, if the reaction becomes more intense under the collapse treatment of the lung.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: *137-317* (July 10) 1926

*Sterile Wedlock. J. A. van Dongen.—p. 150.
Free Diaphragmatic Hernia. D. Schoute and C. Orbaan.—p. 160.
Tertian Malaria with Long Latency. J. J. de Jong.—p. 163.

Treatment of Sterility.—Van Dongen has analyzed 510 cases of sterile wedlock in his practice in the last ten years. In two of four cases in which the sterility was of ten to fifteen years' standing, conception followed in four or five months after dilation of the cervix and curetting, after twenty-four hours of laminaria. He warns against insufflation of the tubes or injection of a contrast substance, and against Ott's method of injecting charcoal into the abdominal cavity, regarding them as potentially dangerous and unreliable. He cites Schwarz' report in 1925 of 226 instances of childless marriages in which conception finally occurred in from 68 to 13.8 per cent, without extraneous intervention, while the proportions were 66.6 to 14 per cent in the seventy-four other women treated by dilation of the cervix. Van Dongen insists that our task is to improve the present crude and defective methods of examination and treatment, and trust more to Nature. No marriage should be labeled sterile until after the third year.

Svenska Läkaresällskapets Handlingar, Stockholm

52: 1-39 (June 1) 1926

*Liver Function Tests. J. Tillgren.—p. 1.
*Sarcoma of the Heart. F. Wahlgren.—p. 12.
Korsakoff's Disease. H. Marcus.—p. 28. C'tn.

Pathogenesis of Jaundice and Liver Function Tests.—Tillgren remarks that tests of liver function are now at the stage of development reached by kidney function tests ten years ago. He regards hyperbilirubinemia as fully as instructive in liver disease as the residual nitrogen in nephritis. It is preeminently useful in the diagnosis of latent, so-called acholuric jaundice, and in warning of hepatic damage. He confirmed on 100 patients the advantages of bromsulphthalein in chromodiagnosis of liver disease, and the negative responses in febrile diseases and in perniciosa with hyperbilirubinemia.

Sarcoma of the Heart.—Wahlgren compares two personal cases with fifty-two from the records.

Ugeskrift for Læger, Copenhagen

88: 633-652 (July 8) 1926

*Course of Glycolysis in the Blood. S. A. Holbøll.—p. 633.
*Fatal Poisoning from Bismuth Treatment. J. Munck.—p. 637.
Injury from Intra-Uterine Pessaries. R. Hastrup.—p. 641.

Course of Glycolysis in the Blood.—Holbøll found that the speed of the glycolysis did not depend on the amount of glucose present in the blood. The presence in normal blood of the more active form of glucose—"new glucose"—explains the more rapid glycolysis compared with diabetic blood.

Fatal Bismuth Poisoning During Treatment of Syphilis.—Munck's patient was a married man, aged 45, with a healthy child. Twenty years before there had been a transient eruption but nothing suggesting a chancre, and no treatment had been taken. Lately, some syphilids had developed on the scrotum and buttocks, and neo-arsphenamine was given. This induced fever and rheumatic pains, and bismuth was administered instead. When a total of 5.13 Gm. of bismuth had been reached, symptoms developed suggesting bismuth poisoning, and necropsy revealed cirrhosis of the liver, colitis, nephrosis and other changes characteristic of poisoning from heavy metals.

88: 653-672 (July 15) 1926

*Experimental Hermaphrodism. Pézard et al.—p. 653.
*Radical Operation on the Internal Ear. R. Lund.—p. 654.
The Physician in Organized Welfare Work for Children. Monrad.—p. 663.
The Promotion of Correct Nutrition. C. Jürgensen.—p. 667.

Experimental Periodic Gynandromorphism. — The cock illustrated here had the feathers removed in different areas and at different times after implantation of an ovary, and after implantation of testes when it was assumed that the ovary had been resorbed. The plumage grew again with male or female characters in the different crops of feathers. The periodic inversion is evidently due to slight fluctuations of the endocrine tissue to one or the other side of the effectual minimum. The phenomena correspond to the law of "all or nothing"—an instance of periodic inversion of the sex.

Radical Operation on the Internal Ear in Disease Secondary to Otitis Media.—Lund makes a practice of lumbar puncture at once in every case of acute destructive disease of the internal ear. If two cells per millimeter are found in the spinal fluid and no other symptoms indicate meningeal irritation, the lumbar puncture must be repeated in twenty-four hours at latest. If there are more cells than this, or if other symptoms are noted, the radical operation must be done at once. He analyzes the experiences with 117 cases.

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ROENTGENOLOGIC ASPECTS OF VARIOUS TYPES OF HERNIA[*]

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Here and there in our routine work, we have encountered cases of hernia in which the roentgen-ray examinations have been very interesting, and at times life saving. Some of these experiences have occurred with ordinary inguinal and postoperative ventral hernia and others with umbilical hernia; but the most striking have been found with diaphragmatic and intra-abdominal herniations. Relatively few of the cases have been studied definitely on account of the hernia; indeed, in many, especially in the small diaphragmatic and retroperitoneal hernias, there has been little in the clinical history or physical examination to suggest the existence of such an abnormality. It is also true that when these cases were worked out, it became evident that there was a definite relation between the hernia and the symptoms, which at first seemed so slightly related. The fact that these types of hernia are very rare should not discourage their study with the roentgen rays, for surely the rarer and the more obscure the lesion, the more credit to the examiner for discovering it.

Many physicians will readily acknowledge the haziness of their small fund of information concerning retroperitoneal hernia. Many who have had their attention drawn to this condition have had the knowledge thrust on them at the operating or necropsy table. To date, the literature contains very few references to cases of intra-abdominal hernia correctly diagnosed prior to operative or necropsy check, and a study of the published reports makes it very clear that our best means of reaching a correct diagnosis is through the proper interpretation of roentgenograms. It is therefore our purpose in this communication to review briefly the roentgenologic aspects of some of the different types of abdominal hernia, refer to some of our personal cases, and discuss some of the difficulties of differential diagnosis.

In addition to the various types of retroperitoneal hernia, we have elected to discuss diaphragmatic, umbilical, inguinal and postoperative hernias. We have had no case of femoral hernia in which the roentgenograms have been helpful, although it will be evident from our discussion of inguinal hernia that a roentgen-ray study of femoral hernia will occasionally be useful.

The retroperitoneal hernias occur in four principal groups: (1) duodenal hernia, of which Moynihan described nine varieties; (2) paracecal hernia; (3) intersigmoid hernia, and (4) hernia into the lesser peritoneal cavity, through the foramen of Winslow or through the transverse mesocolon.

PARADUODENAL HERNIA

Although Moynihan has described nine fossae around the duodenojejunal junction, the most common hernias occur in relation to the superior and inferior paraduodenal folds and their corresponding fossae. These folds are composed of poorly vascularized, thin peritoneal membranes passing laterally from the bowel to the posterior wall of the abdomen. The lateral margins of these membranes are usually joined to form a semicircular fold beneath which lies the fossa of Landzert. Into this fossa usually occurs the left paraduodenal hernia. The fossa of Waldeyer, into which most of the right paraduodenal hernias occur, lies in the first part of the mesojejunum, bounded in front by the superior mesenteric artery and behind by the lumbar vertebrae, its orifice pointing to the left and its blind extremity to the right. Duodenal hernia occurs on the left side three times as often as on the right. Of ninety-one cases of left paraduodenal hernias reviewed by Pikin,[1] only three were clinically recognized; and of thirty-one cases of right duodenal hernia collected by Nagel and by Lower and Higgins,[2] a correct diagnosis was not made in any.

It is therefore evident that we should carefully review the possibilities of making a correct interpretation of the roentgenograms. Our experience impresses us with the fact that it is possible to diagnose correctly retroperitoneal hernia involving the bowel. We offer herewith the roentgenograms in two of our cases, and call attention to the fact that the published roentgenograms in the reports of Lower and of Nagel show identically the same characteristics displayed in our own illustrations. In the future, we believe that diagnosticians should bear in mind the possibility of encountering this type of retroperitoneal hernia and make a correct diagnosis in most of the cases.

In a few of the published cases, the results of the roentgen-ray examinations have been given in detail, even though the proper interpretation was not recognized until after operation. The disposition of the small bowel has been typical, as illustrated in figure 1, a roentgenogram of one of our own cases in which a correct preoperative diagnosis was based on the roentgen-ray study. It will be observed that the small intestine coils lie confined to a certain well bounded zone, more or less spherical (fig. 2), from which they cannot be disturbed by any amount of manipulation or change of position of the patient. The part of the small bowel (usually almost the entire small intestine) thus compressed into an ovoid mass remains supported high in the abdomen when the patient assumes the erect position, whereas normally the small bowel gravitates downward into the true pelvis with the patient erect. There is often a marked distortion or displacement of the colon, and sometimes also of the stomach, but we have found several cases in which no distortion of the stomach or large bowel is evident. In some cases the entire colon lies in the left side of the abdomen, so that the small bowel appears in the right upper quadrant, suggesting a congenital failure of the colon to rotate. In fact, in the differentiation between retroperitoneal hernia and an incomplete rotation of the colon lies one of the obstacles to correct interpretation. In every case which seems to present evidence of incomplete rotation, that is, in which the duodenum comes from the pylorus directly toward the right, with distribution of the upper jejunum on the right instead of on the left side of the midline, one should suspect a possible paraduodenal hernia. Sometimes there is a dilatation of the duodenum due to constriction of the first part of the jejunum by the neck of the sac. In one of our cases, the terminal ileum reaching up to the hernial sac was visualized by the opaque enema passing through the ileocecal valve (fig. 3).

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[*] From the Battle Creek Sanitarium.

[*] Read before the Section on Radiology at the Seventy Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Pikin, cited by Nagel, G. W. Right Paraduodenal Hernia, J. A. M. A **81**: 907 (Sept. 15) 1923.

[2] Lower, W. E., and Higgins, C. C.: Ann. Surg **82**: 576 (Oct.) 1925

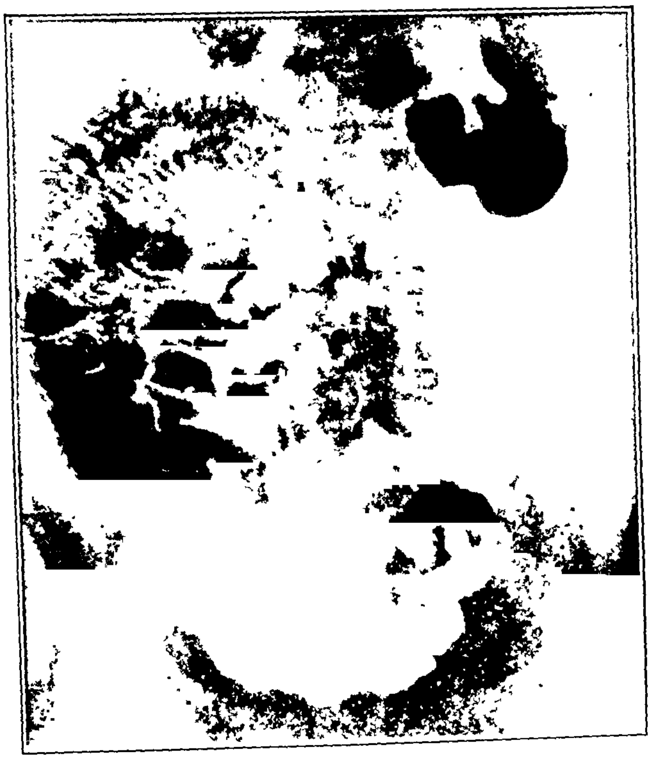
Fig. 1.—The authors' first case of retroperitoneal hernia showing the spherical, well bounded zone in which the small intestine is confined.

Reference has been made to the greater frequency of left as compared with right paraduodenal hernia. It would be desirable to differentiate between these two types of hernia in advance of operation, but the roentgen-ray examination hardly permits more than a conjecture. From a practical standpoint, there is little advantage to be derived from such a detail of interpretation. When we have once found the hernia, it is more important to determine, if possible, whether adhesions exist, whether it is possible to reduce the hernia, and whether acute obstruction is likely to supervene; but these are all problems which have not yet been solved by roentgen-ray study. The important thing is the determination of a retroperitoneal hernia; the indication is usually for surgical relief, though the question of surgical indication may now and then be debatable.

There is usually only small intestine in the hernial sac, but Morton's [3] case showed cecum and ascending colon in the hernia, and Pybus [4] tells of a case in which there was herniation of a few inches of the descending colon.

PARACECAL AND INTERSIGMOID HERNIA

The paracecal fossa lies posterior to the cecum and extends upward toward the kidney. A hernia into this fossa is a great rarity. In one case from the Mayo Clinic,[5] there was an accompanying distortion of the cecum toward the left, but the reporter considered the unusual position of the cecum to be due to a transposition of the viscera. We also have one case to report, and in this the cecum occupied the normal position. In the stereoroentgenograms, it was easy to see that several coils of small intestine occupied a position behind and to the right of the ascending colon and cecum. These herniated coils were so densely adherent that it was necessary to resect 20 inches of terminal ileum, the cecum and ascending colon, with end-to-side anastomosis, to give relief. The patient remains in excellent health fourteen years after the operation. A similar report is published by Shapiro,[6] in which a loop of small intestine surrounded the cecum and disappeared in a little opening in the mesentery from which he extracted 20 cm. of gangrenous ileum. No roentgen-ray study was made of Shapiro's case.

We have not recognized a case of hernia into the intersigmoid fossa, though the literature gives us accounts of some interesting cases, in the light of which we should in the future be prepared to make a proper diagnosis. To recognize the presence of small intestine behind or between the layers of the sigmoid mesocolon, stereoscopic and fluoroscopic manipulative studies should be made with a combined barium meal and opaque enema, so that the small intestine and the sigmoid may be filled simultaneously. Of course, in the event of only a few inches of small intestine being incarcerated in the sac, there will be great difficulty of recognition, but in the few reported cases a considerable portion of small bowel had entered the hernia. Less than a dozen intersigmoid hernias have been reported.

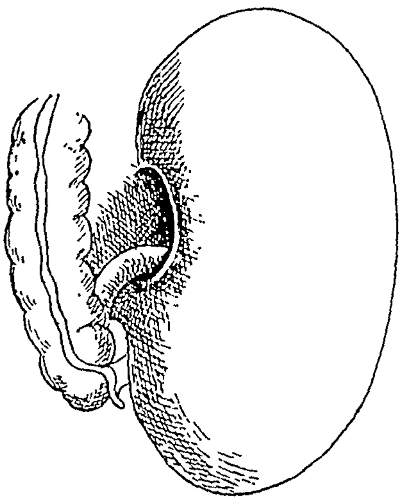
Fig. 2.—Schematic drawing taken from Moynihan, showing position of small bowel in retroperitoneal hernial sac.

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3. Morton, J. J.: Atresia of the Duodenum and Right Internal Hernia, Am. J. Dis. Child. **25**: 371 (May) 1923.
4. Pybus, F. C.: Brit. M. J., 1916, no. 2, cited by Andrews, Edmund: Surg. Gynec. Obst. **37**: 740 (Dec.) 1923.
5. Copenhaver, N. H.: Intra-Abdominal Hernias, Arch. Surg. **7**: 332 (Sept.) 1923.
6. Shapiro, A.: Internal Hernia, Zentralbl. f. Chir. **52**: 1541 (July 11) 1925.

HERNIA INTO THE LESSER PERITONEAL CAVITY

Hernia into the lesser peritoneal cavity presents a more fertile field for roentgen-ray investigation. Several cases have been correctly interpreted prior to operation. The proper reading of the roentgenograms was possible through repeated examination and the use of manipulation with the protected hand under the fluoroscopic screen. Though the literature makes no reference to the value of the stereoscopic method, its advantage need only be mentioned. The stereoscopic films must be made with very brief exposure (one-tenth second or less) and with very little interim between the two exposures. Good results are obtainable only with apparatus that permits completion of the two films within one and a half or two seconds, the breath being held.

Hernia through the foramen of Winslow occurs as frequently as right duodenal hernia. It is probable that the small size of the foramen and the fact that the transverse colon lies in the way are two factors that discourage the passage of small intestine through this orifice. Most of the reported cases present gross abnormalities, such as unusually long mesentery; and it is evident that without some such abnormal condition this type of hernia could not occur. To establish the existence of such a hernia, small bowel should be identified anterior to the hepatic flexure or first part of the transverse colon.

But there is another way through which small bowel may pass into the lesser peritoneal sac; namely, through a breach in the transverse mesocolon. The breach may be of traumatic or congenital origin; and the hernia, as is curiously the case in the majority of instances reported, may be associated with a coexisting gastric or duodenal ulcer, though no satisfactory explanation has been offered for the coexistence of the two lesions. Lombard[7] published a summary of twenty-eight cases, not including an additional one of his own. Of these, eight were discovered at necropsy, and no history was obtainable; in the remaining twenty cases, eleven were characterized by digestive complaints, and nine showed estinal obstruction, which was chronic in three and ute in six.

Pfanner and Staunig[8] were able to make a correct entgenologic and clinical diagnosis in a case prior to eration. The roentgen-ray study showed a bilocular omach with an ulcer on the lesser curvature. Two rallel loops of small intestine passed above the lesser rvature, being directed anteriorly and downward, ssing in front of the body of the stomach and the ansverse colon, toward the right iliac fossa. It was possible to move them laterally by manipulation der screen guidance. Operation confirmed the oentgen-ray examination.

Heaney and Simpson[9] report a similar case roentnologically. Again, there was found an hour-glass omach. The hepatic flexure was low, the first part f the transverse colon passing down toward the pelvis, here it could not be manipulated free from the cecum. here was marked delay in the colon. Operation evealed small intestine emerging from a large transerse opening in the gastrocolic omentum, having found s way into the lesser peritoneal cavity through a transmesocolic rent (fig. 4). These authors reviewed twenty-one cases of hernia of small intestine through the transverse mesocolon, finding that the small bowel emerged in one case through the foramen of Winslow, in eight through the gastrohepatic omentum, in three through the gastrocolic omentum, while in the nine remaining cases the herniated small intestine remained in the lesser peritoneal sac. In fourteen of the twenty-one cases, a gastric or duodenal ulcer or a carcinoma was present.

DIAPHRAGMATIC HERNIA

Diaphragmatic hernias usually occur through the posterior part of the diaphragm on the left side. Right sided hernias occur only about once to ten times on the left side (Eppinger). The principal difficulty in differential diagnosis is due to the similarity of the roentgenograms in relaxation or eventration of the diaphragm and in true diaphragmatic hernia, especially in the traumatic cases. The contents of the hernia may include stomach, small intestine, colon, omentum, spleen, liver, pancreas and kidney. Hedblom[10] found in the literature and in his Mayo Clinic series four cases involving the pancreas and one involving the kidney. Knagg[11] reported five cases in which pancreas entered into a diaphragmatic hernia. The great variability in the symptoms and signs, and the fact that in a considerable proportion of the cases the symptoms are only slight, make it a difficult matter to establish a clinical diagnosis without the aid of the roentgen rays; and even with the aid of the screen or roentgenogram the lesion is sometimes found only after several examinations. Spontaneous reduction of the hernia may occur just prior to the roentgen-ray study, thus contributing to diagnostic failure. Our own series of diaphragmatic hernias illustrates this point very well;

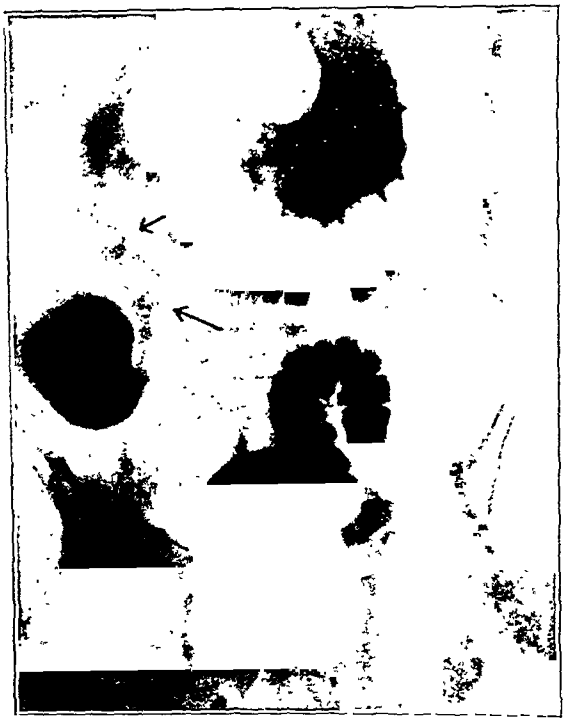

Fig. 3.—Authors' second case of retroperitoneal hernia. The colon is filled by the enema, the terminal ileum (shown by arrows) reaching upward toward retroperitoneal hernial sac.

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[7] Lombard, Pierre: Hernies transmésocoliques, J. de chir. **22**: 503 Dec.) 1923.

[8] Pfanner, W., and Staunig, K.: Beitr. z. klin. Chir. (Bruns') **21**: 375, 1921.

[9] Heaney, F. S., and Simpson, G. C. E.: Hernia Through the Transerse Mesocolon, Brit. J. Surg. **13**: 387 (Oct.) 1925.

[10] Hedblom, C. A.: Diaphragmatic Hernia, J. A. M. A. **85**: 946 (Sept. 26) 1925.

[11] Knagg, quoted by Freud, J., and Horner, E.: Fortschr. a. d. Geb. d. Röntgenstrahlen **29**: 201, 1922.

in one case the hernia was discovered only at the third examination, and in another the obstruction became acute and demanded operation within twenty-four hours after an examination in which no abnormality could be discovered, although all of the precautions later to be discussed were carefully observed.

The roentgen-ray diagnosis of diaphragmatic hernia demands the demonstration of the presence of part or all of an abdominal organ above the diaphragm. Eventration, relaxation and congenital elevation of the diaphragm mean a condition in which one half of the diaphragm is greatly stretched, its dome being pushed high up into the corresponding half of the thorax, so that a part of the abdominal contents occupies an unusually high position in the thoracic cage. Eventration, like hernia, usually affects the left side, but it may also occur on the right. In a few cases there has been found congenital absence of the diaphragm on one side. Such a condition is hardly compatible with life, but Beckman[12] records that one boy lived to the age of 17.

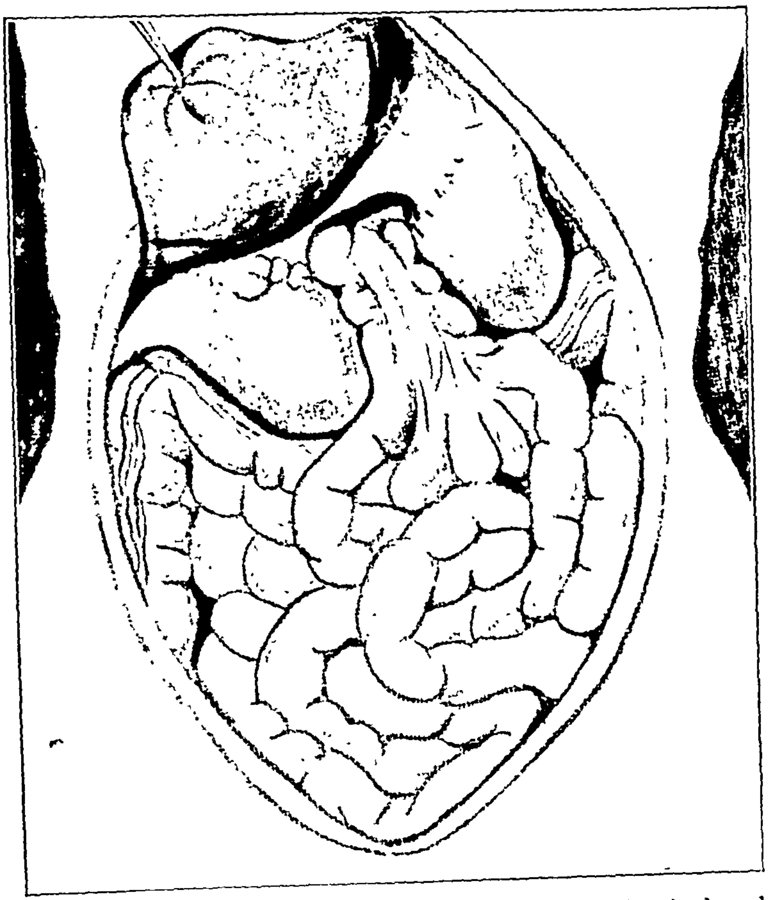

Fig. 4.—Drawing from Heaney and Simpson illustrating hernia through transmesocolon into lesser peritoneal cavity, emerging through gastrocolic omentum.

When a considerable portion of a hollow viscus, the stomach for instance, passes through a breach in the diaphragm into the thorax, it adjusts itself elastically to the surrounding parts on account of the excessive pressure within it. Its lower surface lies smoothly on the diaphragm, and above, it arches toward the lung, which yields before its pressure.

Generally, it is better to examine the patient in both the erect and the horizontal position. If one employs the erect position only, there is greater probability of failure. Only rarely does one detect a fluid level in the stomach or bowel lying above the diaphragm, and even if the opaque medium is administered with the patient standing, the hernia is often difficult to detect. Many times we employ an effervescent powder before giving the opaque material. If this is done with the patient erect, the rising gas generated by the mixture will clearly delineate the portion of the stomach that lies in the thorax. (Similarly, one may inject air into the rectum, to detect colon in the thorax.) One sees a high pocket or globus of air, bounded above by an arched line and below by a horizontal fluid level, which varies, depending on the degree of filling of the stomach. Great care and perseverance are required to make out the diaphragm beneath the air pocket, but it must be carefully sought, for exact determination of the line of the diaphragm is the chief point for differentiation between diaphragmatic hernia and eventration.

On the other hand, if the patient is examined in the supine or prone position, and especially if the opaque meal is administered while he occupies this position, the hernia will probably show. Especially helpful is a movement of straining by the patient while in this position; he should take a deep breath, and, while holding it, strain. This forces the diaphragm and liver downward so that there is afforded a better view of the lower end of the esophagus, and also increases the intra-abdominal pressure while simultaneously lowering the pressure within the thorax, thus favoring the entry of hernial contents into the opening. In addition, the examiner should employ the various oblique positions with the patient recumbent, the intention being to see the most favorable position for bringing the opaque medium to the cardiac orifice. Also useful is the Trendelenburg position, combined with the foregoing procedures.

Even with all these precautions it is quite easy to overlook a small diaphragmatic hernia, and it is always well to repeat the examination if there are any symptoms suggestive of such a lesion. There is sometimes stasis in the imprisoned organ, but this is rare; when found, it emphasizes the need of surgical treatment.

Careful routine observation of the fundus of the stomach by the technic just described will reveal not only the majority of diaphragmatic hernias but also the occasional case of carcinoma involving the fundus in the neighborhood of the cardiac orifice, a type of lesion all of us have found it so easy to overlook on the routine barium meal examination. It has been our custom for sixteen years to include in our routine study of the alimentary tract observations in the various oblique anterior and posterior positions.

Of course, such careful and detailed roentgen-ray study is not required to detect the large hernias of the diaphragm, for they are obvious at the very first glance with the fluoroscope. Most of our large hernias were detected in the routine brief fluoroscopic examination of the chest, to which every new arrival at the Battle Creek Sanitarium is subjected during the first twenty-four hours of his stay. Others were discovered during the routine barium meal study, but a few were found only after repeated examination in the effort to explain unusual symptoms. In the large hernias, the heart is usually displaced to the right.

Einar Key[13] cites a case of voluminous left diaphragmatic hernia, apparently congenital, and on the herniated stomach the typical roentgenographic signs of a gastric ulcer, which operation proved to be adherent to the pericardium.

Most stress has been laid on the stomach, for it is the viscus most frequently participating in a diaphragmatic hernia, being usually the first organ to enter.

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[12] 12. Beckman, H.: Surg. Gynec. Obst., 1909, p. 154.

[13] 13. Key, Einar: Zentralbl. f. Chir. **51**: 95 (Jan. 19) 1924.

When, however, one finds that the circumscribed air pocket above the diaphragm which is thought to be hernia is not entirely filled by the opaque material in the stomach, even with the patient in the Trendelenburg position, the assumption is justified that intestine is also present above the diaphragm. In Hedblom's series of 343 cases in which the contents of the hernia were stated, in ninety-four the stomach was the only hollow viscus involved; in 101 there was colon or small intestine in addition to the stomach, and in eighty-six bowel alone was found in the hernia. In Knagg's series of fifty-three cases of diaphragmatic hernia involving the stomach, in forty-one there was also small bowel and in thirty-four large bowel in the thorax.

Following through the progress of the opaque meal will invariably answer the question thus raised. In some acute cases, the urgency of the symptoms may demand an early termination of the examination, in which case the examiner may proceed at once to the introduction of the opaque enema. In one of our recent cases, we discovered the left flexure of the colon in the hernia together with a portion of the fundus of the stomach, and were able to make this as a definite diagnosis with the roentgen-ray study. From the clinical history, there seemed to be definite indication of carcinoma of the colon proximal to the colonic obstruction in the hernia. Operation verified the roentgen-ray diagnosis and revealed in the enormously dilated transverse colon, just proximal to the incarcerated left flexure, an advanced carcinoma. A large section of the transverse colon was removed, and continuity restored by end-to-side anastomosis, with fixation of the shortened transverse colon to the abdominal wall.

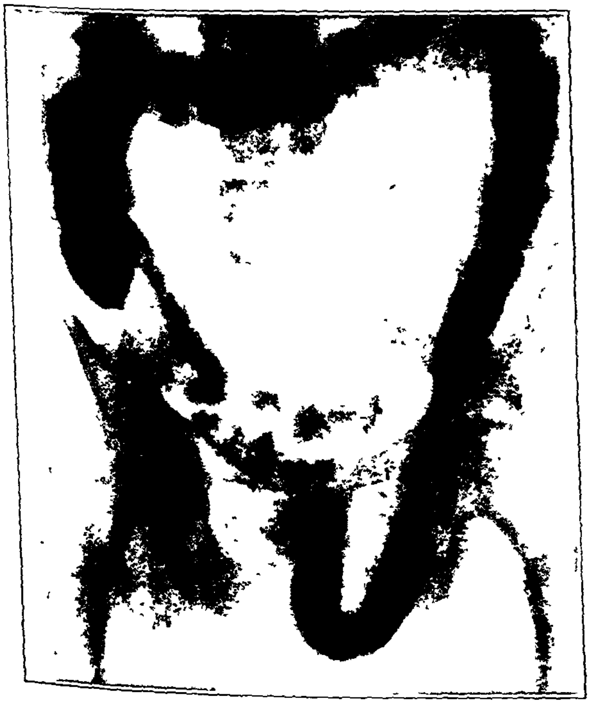

Fig. 5.—Sigmoid colon in left inguinal hernia.

There has been no recurrence of the hernia, and the patient was in good health a year later.

The roentgen-ray image of the stomach may show it divided into three parts. This is explained by the fact that when the stomach enters a breach in the diaphragm, other than the esophageal orifice itself, it is gradually rolled into the thorax along the greater curvature by aspiration, and the fundus finally draws part of the lesser curvature with it. The stomach may be thus divided into three parts: the first, adjacent to the cardia, lies below the diaphragm, its lower wall formed by the lesser curvature, or, if torsion has occurred, by the greater curvature; the second and largest part lies above the diaphragm, its upper wall formed by the greater curvature; while the third part is tensely stretched and extends from the hernial orifice to the pylorus, lying just beside or behind the first part. When the first part is distended with the opaque meal, we may be surprised at the apparent spectacle of an hour-glass stomach with both filling and emptying from the lower sac.

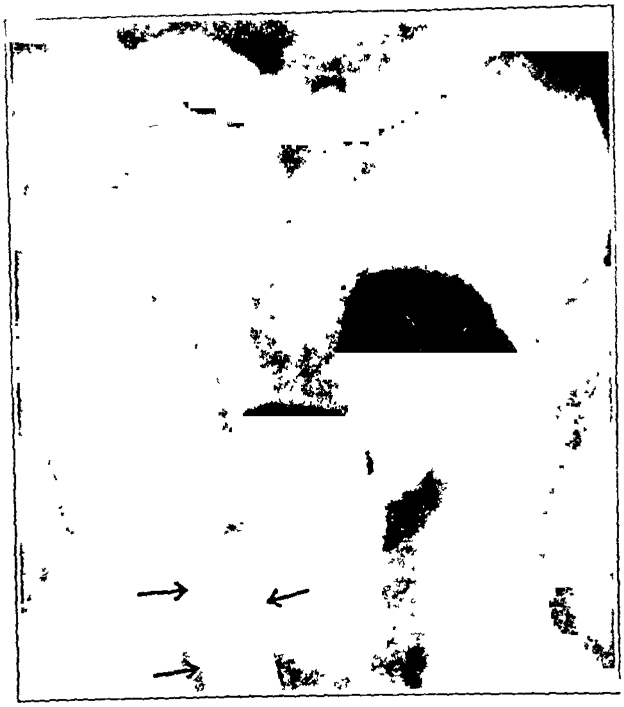

Fig. 6.—Terminal ileum, shown by arrows, in right inguinal hernia.

The diagnosis of diaphragmatic hernia depends on proof of the absence of the intact normal rounded dome of the diaphragm, with characteristic thoracic shadows above the rounded dome. The hernia having been discovered, it should be possible, especially with the patient in the erect position, to detect the air globus in the highest part of the gastric fundus within the thorax and to see through it the superimposed shadow of pulmonary markings characteristic of the base of the lung.

Herniation of the omentum or other solid organs, which occurred in about one sixth of the cases in Hedblom's series, is very difficult to determine by any means of examination. Pneumoperitoneum offers here the greatest prospect of success, and has been successfully used in the diagnosis of diaphragmatic hernia without any published ill results to the patient. We have never found it necessary to employ this procedure in diaphragmatic hernia, but can see no objection to its use in selected cases. It is especially helpful in the differential diagnosis of hernia and eventration, but before resorting to pneumoperitoneum one should carefully follow the technic suggested above in order to identify the hernial ring. Lateral screen and film studies are very important for this purpose.

Another procedure for differentiating hernia and eventration is the observation of paradoxical movements of the diaphragm. This should be seen with hernia and not with eventration; but if the hernia is adherent, then it follows the movements of the diaphragm; and on the other hand, with a long standing relaxation of the diaphragm, the musculature may be so injured that it is incapable of contracting, and there is a resulting paradoxical movement. Phrenic nerve paralysis also gives the sign.

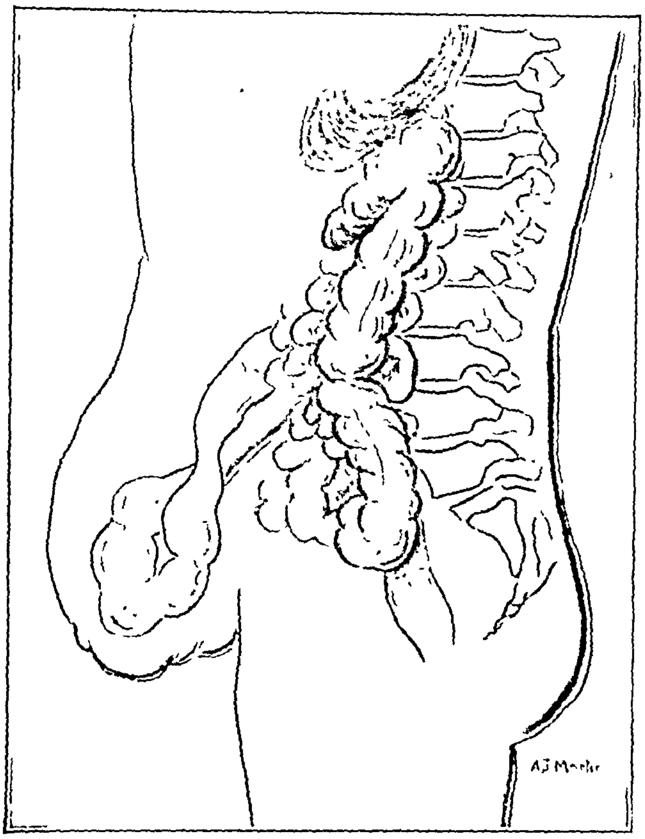

Fig. 7.—Diagram illustrating lateral appearance of ventral hernia containing small intestine, shown roentgenographically in figure 8.

As a unique sign in eventration, several German authors have described a double contour of the arched line of the diaphragm, said to be formed by a stair-step formation of different segments.

In the differential diagnosis of diaphragmatic hernia, one must consider and rule out the following: eventration; diverticulum of the esophagus; hour-glass stomach; sacculated air or fluid and air in the chest; thoracic stomach; diverticulum of the stomach, and gastric ulcer causing cicatricial contraction with concomitant relaxation of the left diaphragm.

Eventration of the diaphragm has been sufficiently discussed in the preceding paragraphs. The differentiation is especially difficult when pleuritic adhesions have occurred about the hernia. Thus far, according to Freud and Horner,[14] no case has been reported of right eventration of the diaphragm with the stomach and intestine under the raised dome; hence, when this situation obtains, a diagnosis of hernia seems assured. The stomach usually retains its normal form in eventration on the left side.

Diverticulum of the esophagus is easy to confuse with a para-esophageal hernia, and a differentiation is not always possible. Haenisch,[15] especially, has written on this subject, citing several interesting and difficult cases. An epiphrenic diverticulum of the esophagus fills from and is attached to the esophagus, as will be shown by accurate observation at the moment of ingestion of the barium mixture. A small circumscribed dilatation of the cardiac orifice of the stomach may simulate diverticulum or hernia. By careful screen study, this dilatation will be seen to occur in the esophagus and above the diaphragm.

In the so-called thoracic stomach, the esophagus is shortened and never passes through the diaphragm, the stomach being found constantly in the thorax. Cunha[16] cites the case, and gives the results of the roentgen-ray examination, of a child, aged 4 months, with the heart and mediastinum in normal situation, but with an ectopic stomach situated in the right side of the chest. He states that when the stomach occupies the right side of the chest it is always a case of ectopia gastrica and not a diaphragmatic hernia.

The other items mentioned above as needing differentiation are self evident and require no further discussion here.

UMBILICAL, INGUINAL AND FEMORAL HERNIA

In the majority of umbilical and inguinal hernias, it is of course understood that the roentgenograms are not of great practical interest, constituting some interesting discoveries of secondary importance, though sometimes of great rarity. This is illustrated, for instance, when there is shown in the hernia a portion of the stomach or the appendix, especially when the latter is shown to be situated in a left inguinal hernia, or when one plans to remove the appendix in connection with operation for right inguinal hernia. We know of a case in which a surgeon sought in vain for the appendix through a small right inguinal hernia incision, for the very good reason, as shown by subsequent roentgen-ray examination, that the appendix was on the left side. Dreessen[17] found in the literature three cases of crural hernia and twelve of inguinal hernia involving the stomach, all being found at necropsy or operation except the case of Rieder, in which, thanks to the roentgen-ray study, the diagnosis was made before operation. Dreessen adds another case, a personal observation, of a very much elongated bilocular stomach, the lower sac lying in an inguinal hernia. After operation, a control examination showed the

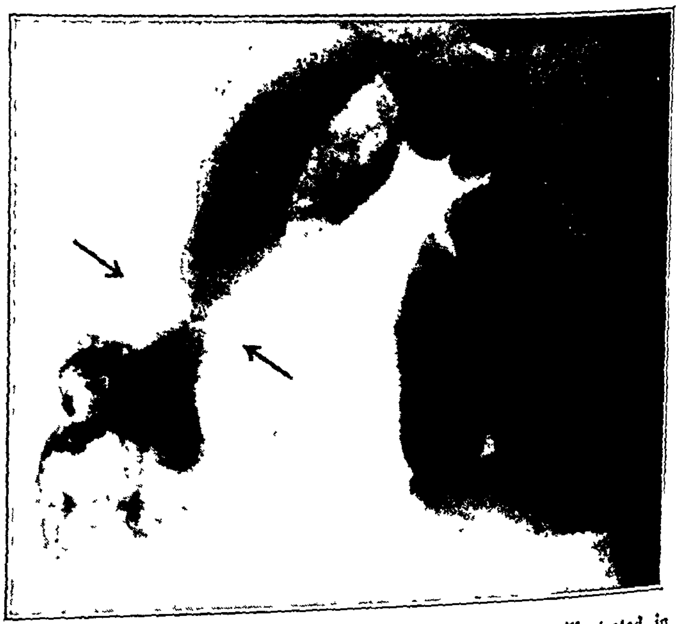

Fig. 8.—Ventral hernia containing small intestine as illustrated in diagram (fig. 7): Arrows indicate neck of hernial sac.

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[14] Freud, J., and Horner, E.: Fortschr. a. d. Geb. d. Röntgenstrahlen **29**: 201, 1922.

[15] Haenisch, F.: Fortschr. a. d. Geb. d. Rontgenstrahlen (Kongressheft) **32**: 7, 1924; **30**: 62, 1923; **30**: 520 (April 14) 1923.

[16] Cunha, Juan: Estómago ectópico en el emitórax derecho, An. de Fac. de Med. Montevideo **9**: 575 (July and August) 1924.

[17] Dreessen, J.: The Presence of Stomach in an Inguinal Hernia, Zentralbl. f. Chir. **52**: 457 (Feb. 28) 1925; abstr. J. de Chir. **26**: 74 (July) 1925.

stomach in normal position, with its lower border only four finger breadths below the umbilicus.

Rueben[18] has reported a case of a subserous lipoma of the transverse colon incarcerated in the sac of an umbilical hernia, and cites fifteen other cases in which this anomaly was found, none of them being diagnosed prior to operation. This shows one of the possibilities if one will use the roentgen-ray examination, especially employing the lateral position, as is illustrated in figure 7. Having determined that small intestine is in the hernial sac, especially through such a small opening as is evident in figure 8, the indication for operation is considerably more urgent than if the intestine within the hernial sac proves to be colon. An appendix in the hernial sac increases the surgical indication. We have observed acute appendicitis. with the appendix lying within a right inguinal hernial sac. One of our surprises was an extensive herniation of the sigmoid in an inguinal sac with multiple diverticula in the herniated sigmoid (fig. 9).

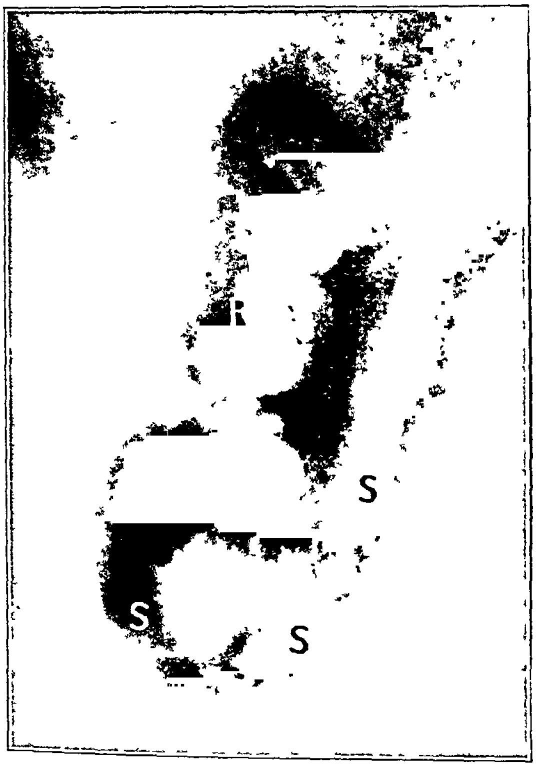

Fig 9.—Multiple diverticula of sigmoid contained in left inguinal hernia. *S S S*, herniated sigmoid; *R*, rectum.

POSTOPERATIVE HERNIA

The roentgenographic examination with the opaque meal, or possibly with pneumoperitoneum, is a fairly constant indication in postoperative hernia that is suspected of causing trouble, especially where there is a history of recurring attacks of abdominal distress. There may be no actual emergence of abdominal contents, the hernia consisting of only a slight separation of the muscle at the site of the wound. In some of these cases we have made some very instructive observations, demonstrating beyond question the obstructive nature of postoperative adhesions, provided they do obstruct. Often, in these cases, the examination conducted during the free period between attacks gives no roentgenographic appearances out of the ordinary; but if it is possible to administer the opaque material (in water, not with a meal) and make the roentgen-ray study while the patient is experiencing the distress of an acute attack, the results are likely to be surprising. Figure 10 was made during an exacerbation of symptoms of recurrent intermittent intestinal obstruction, showing clearly the dilated loop of small intestine with retention of opaque material in the dilated loop, adherent to the anterior abdominal wall at the site of a small incisional hernia, whereas in the roentgen-ray study with the barium meal a few days before when the patient was in comparative comfort, nothing was found to suggest ahesions of the bowel or even low grade obstruction. When intermittent obstruction is suspected, as in the case just cited, roentgen-ray studies should be made hourly, beginning immediately after the barium meal, as long as there is any opaque material in the small intestine.

SUMMARY

A review of the results of operation or necropsy in several hundred cases of hernia involving abdominal contents reveals interesting possibilities in the way of roentgenographic diagnosis. The possibility of encountering hernia should be kept in mind during routine barium meal studies. Special technic is required by special types of hernia, such as diaphragmatic, retroperitoneal and postoperative hernia, in which the roentgen-ray study offers the greatest likelihood of affording useful information.

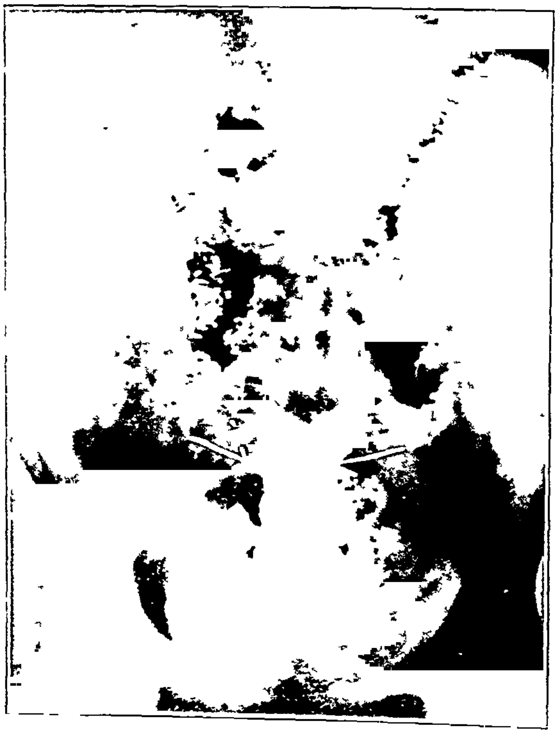

Fig. 10.—Obstructed terminal ileum, shown by arrows, due to adhesions of small intestine in postoperative ventral hernia.

ABSTRACT OF DISCUSSION

Dr. James C. Masson, Rochester, Minn.: In regard to the ordinary types of hernia, umbilical, postoperative, inguinal and femoral, I hardly think the necessity of a roentgen-ray examination can exist in many cases, possibly with the exception of recurrent inguinal hernia in which the recurrence is in the form of an interstitial one. In some cases of fleshy patients it is very hard to tell whether a loop of bowel is incarcerated or not, but in those cases there is just as much danger of symptoms that the patient is having being due to incarceration of the omentum as it is for the bowel itself; but even in cases in which the bowel is present I can hardly see where a roentgenogram would be of much help, as surgery would be indicated anyway. In regard to diaphragmatic hernia, there is no denying that practically all cases should be diagnosed beforehand. It is very seldom that we see strangulation of hernia through the diaphragm. Examination of the patient should include a very thorough roentgenologic examination, which under proper interpretation should show the condition. In considering internal or retroperitoneal hernias, my experience has been limited to one paraduodenal hernia, one retrocecal hernia, and one hernia through the window of Winslow. The paraduodenal hernia was diagnosed accidentally during the course of an operation. Had the roentgenograms been properly interpreted, it should have been recognized. The great majority of paraduodenal and retrocecal hernias are congenital. These patients carry this type of hernia for many years, often with practically no disturbance.

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[18] Rueben, M A Case of Subserous Lipoma of the Colon Transversum Incarcerated in the Sac of an Umbilical Hernia, Acta Chir. Scandinav. 53:339 (March 7) 1921.

Dr. James T. Case, Battle Creek, Mich.: As Dr. Masson says, it is perfectly true that there is very little necessity for routine roentgen-ray examinations of hernia. Nevertheless, we sometimes have strange results in our barium meal work—very unusual arrangements of bowel loops—and it is necessary to know what they are and what we should be looking for. When a condition is rare, and we find it, it is all the more a credit to the radiologist, and it is only by knowing what these rare conditions are that we are likely to recognize them when we do encounter them in our work. It is curious how, as a rule, we see what we are looking for. In preparing my first report on duodenal diverticula, I went back through ten or fifteen thousand roentgen-ray plates of abdominal cases and I picked out ten or twelve cases that I had passed over unrecognized. We should be able to recognize retroperitoneal hernia. It is true that the retroperitoneal hernias do not have, in the majority of instances, symptoms demanding immediate attention as emergency operations; but by careful analysis of the symptoms one finds that most of them have digestive disturbances of a certain grade which have led to a previous diagnosis of chronic appendicitis, gallbladder disease, or something of that sort. The new points of my paper concern especially retroperitoneal hernias. What I have said about diaphragmatic hernia is important and not generally recognized; but a roentgen-ray study is especially valuable in the postoperative hernias even in those cases in which there is no actual hernial sac but only a simple separation of the muscle. In these cases, one often finds small intestine adherent to the thinned out scar of the abdominal wall and it is very important to be able to recognize which loop of intestine is adherent, whether large or small intestine, and whether or not the adhesion is causing obstruction.

The Real Doctor.—If we want the portrait of the real doctor we go, not to books, but to life. We expect him, not in vain, to combine with knowledge the understanding that springs from intuition till it is most richly reinforced by experience, to bear a tranquillizing influence, and to radiate confidence and hope. We expect him to exemplify, like the surgeon of whom Henley wrote:

> Faultless patience and unyielding will,
> Beautiful gentleness and splendid skill,

caring always for life as a thing most precious, quick—and now happily well able—to spare the sufferer one unnecessary pang, the restorer of health, a strong sure help in the more supreme moments:

> In many a house of care, when pain has forced a footing there,
> And there's a Darkness on the stair will not be turned away.

Such is the doctor, the family doctor, who is more to the public at large than the most learned and the most wise who dwell in those two long, unlovely, parallel streets of London, where the waters of healing are laid on at the main. The doctor's professional qualifications may change as medical science advances; the qualifications he needs to win him the confidence of his fellows are unchangeable as human nature itself.—Hogarth, R. G.: *Lancet* **2**:166 (July 24) 1926.

EXPERIMENTAL PRODUCTION OF ACUTE GLOMERULONEPHRITIS

USE OF ACTIVE PRINCIPLE OF SCARLATINAL STREPTOCOCCUS AND A CONSIDERATION OF CHRONIC INTERSTITIAL CHANGES: PRELIMINARY REPORT *

CHARLES W. DUVAL, M.D.
AND
R. J. HIBBARD, M.D.
NEW ORLEANS

The present communication is to report briefly the results obtained in our efforts to induce nephritis in the rabbit with the active principle of the scarlatinal streptococcus. In a previous paper we[1] reported our experiments, which seemed to prove that the toxic moiety of *Streptococcus scarlatinae,* at least for the rabbit, is intimately bound up in the protoplasm of the bacterial cell, and is therefore endotoxic in character. With this toxic substance we have succeeded in producing in the rabbit the acute glomerular lesions that occur in the kidneys of human scarlet fever. In this connection we can say with assurance that the acute stage of renal change in this animal is caused by a protein intoxication, and not by the presence in the tissues of the streptococcus itself.

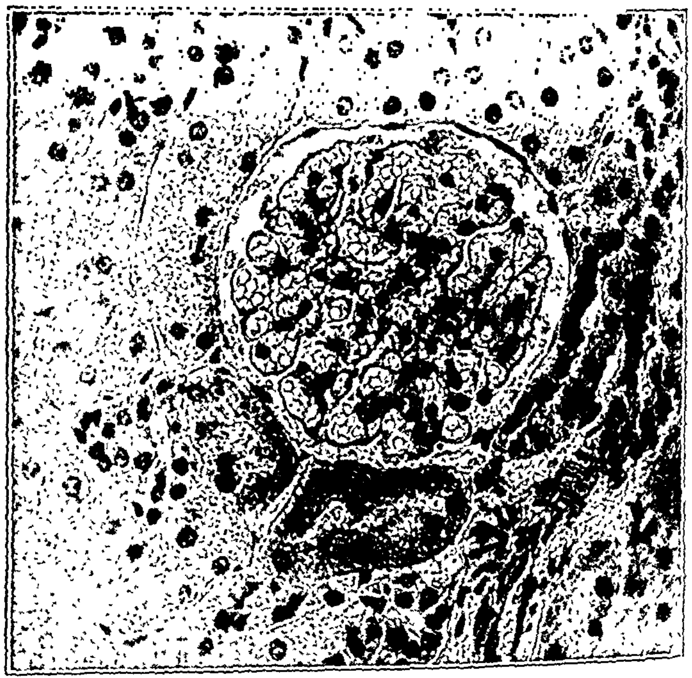

Fig. 1.—Section of rabbit kidney showing early vascular lesion of glomerulonephritis.

The streptococcal toxic substance employed by us in the production of acute glomerulonephritis was secured either through the medium of the peritoneal cavity of the immune rabbit, or by the in vitro method of treating the culture with activated homologous immune serum. The Berkefeld filtrate of the peritoneal lysate and the serum-treated culture contain the endotoxic product of the split streptococcus. Here it should be mentioned that we have been unable to infect the rabbit with large doses of the living streptococcal culture (Dick's "Tyler" and "Harrison" strains), or to produce in this animal symptoms of toxemia with the culture-filtrate of nutrient grown bouillon organisms. On the other hand, acute nephritic lesions occur in the nonimmune rabbit following the injection of a sublethal or fatal dose of endotoxin. Likewise, glomerulonephritis is induced in the immune rabbit injected with a sufficiently large dose of the endotoxin. Acute glomerulonephritis is also occasioned in the immune rabbit by the injection of a single large dose of the living homologous culture.

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* From the Department of Pathology, Tulane University of Louisiana School of Medicine.

[1] Duval, C. W., and Hibbard, R. J.: Proc. Soc. Exper. Biol. & Med. **23**:850, 1926.

It would seem that the mode of production of the acute nephritis in the two instances is the same. In the case of the normal animal that develops glomerulonephritis following the injection of streptococcal "lysate," no lytic action on the antigen is necessary, since the lysate is the toxic split product and is free to act on the kidney. In the instance of the immune animal, the introduced living culture is immediately split by some lytic substance developed in the host during immunization, causing the liberation of the streptococcal endotoxin, which in turn affects the kidney. It is necessary, however, that there be an excess of split product over and above what may be neutralized by antitoxin if nephritis is to occur in the immune animal. To insure this excess a large dose of culture must be employed, but not in amount that will cause sudden death of the animal from toxemia.

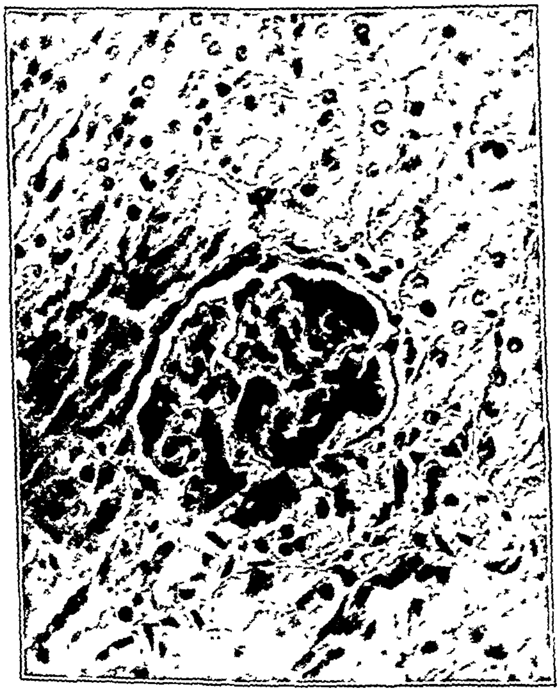

Fig 2—Section of rabbit kidney showing hyaline thrombi in vessels of tuft.

PATHOLOGY

The experimentally induced lesion is essentially an acute glomerulonephritis. The rabbit kidney is markedly swollen, pale or red and mottled with elevated yellowish gray flecks and petechiae in the cortical substance which corresponds to the location of the glomeruli. The organs are frequently a third larger than the normal kidney, and the two are about equally affected.

Microscopically, the changes that occur in the kidney of experimental scarlatinal nephritis range from an active hyperemia of the vessels of the glomeruli. Proliferative changes of the tuft endothelium and Bowman's epithelium, to complete necrosis of the malpighian bodies. In some of the rabbits, every capillary whorl in a section is the seat of lesion. The earliest histopathologic change is noted for the vessels of the tufts in the form of hyperemic engorgement, which results in a marked dilatation of the vascular loops and a concomitant extravasation of serum into the capsular space (figs. 1-4). Actual rupture of the distended tufts often occurs, and in consequence there is hemorrhage into Bowman's capsule (fig. 3). The blood in part finds its way into the corresponding tubule, where it appears as casts. In this stage of the acute nephritis it is common to find numerous large and small hyaline thrombi distending the capillary loops of the tufts. These thrombi appear more frequently in the efferent

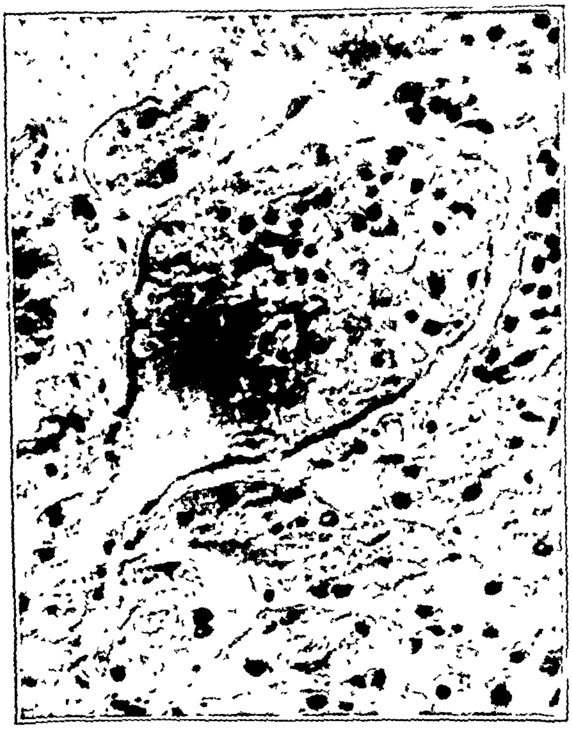

Fig 3—Experimental scarlatinal nephritis in the rabbit: hemorrhage into Bowman's capsule and extending into corresponding tubule.

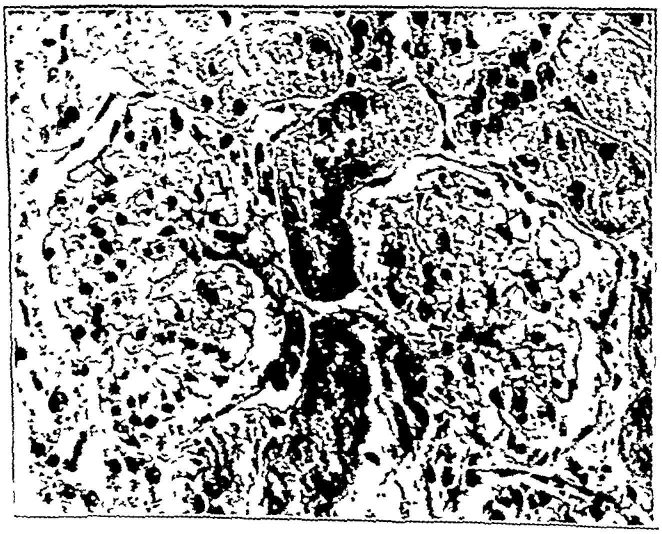

Fig 4—Section of rabbit kidney showing acute glomerulonephritis: swollen and distorted tufts, serum extravasation into Bowman's capsule.

vessels of the glomerular whorl (fig. 2). Another common lesion noted for the glomerular vessels is an increase in the number of endothelial cells. These cells are not in evidence for tufts in which shrinkage and complete disintegration have occurred, Bowman's capsule then containing only the necrotic remains of vessels and their lining endothelium. For some glomeruli the necrotic tuft appears shrunken, in shadowy outline, and eccentrically displaced by collections of serum, blood clot or "crescentric" masses of proliferated capsular epithelium. Neutrophilic elements of acute inflammation are conspicuous by their absence in any of the glomerular lesions.

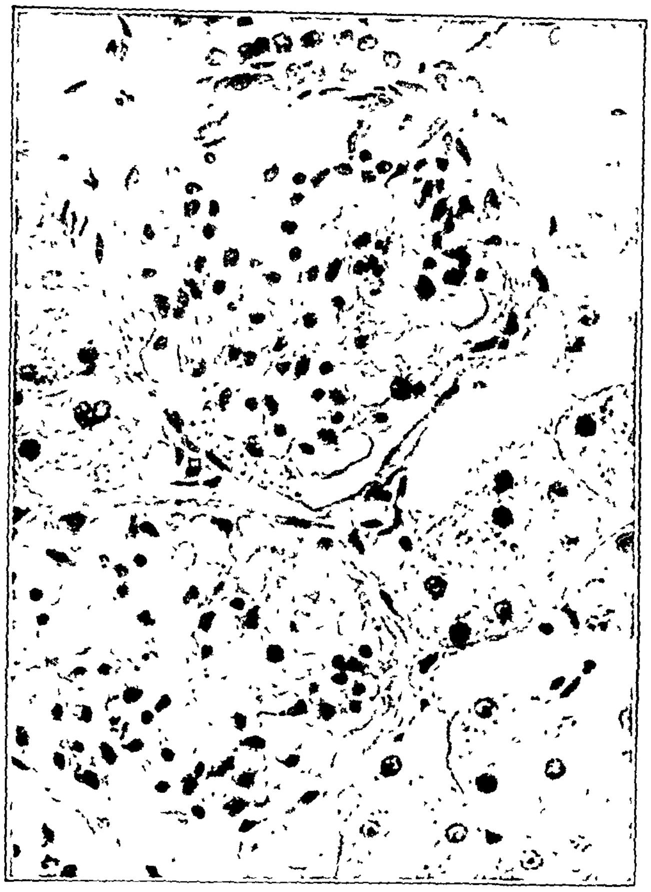

Fig. 5.—Section of rabbit kidney of experimental scarlatinal nephritis: glomerular lesions; increase in number of endothelial cells.

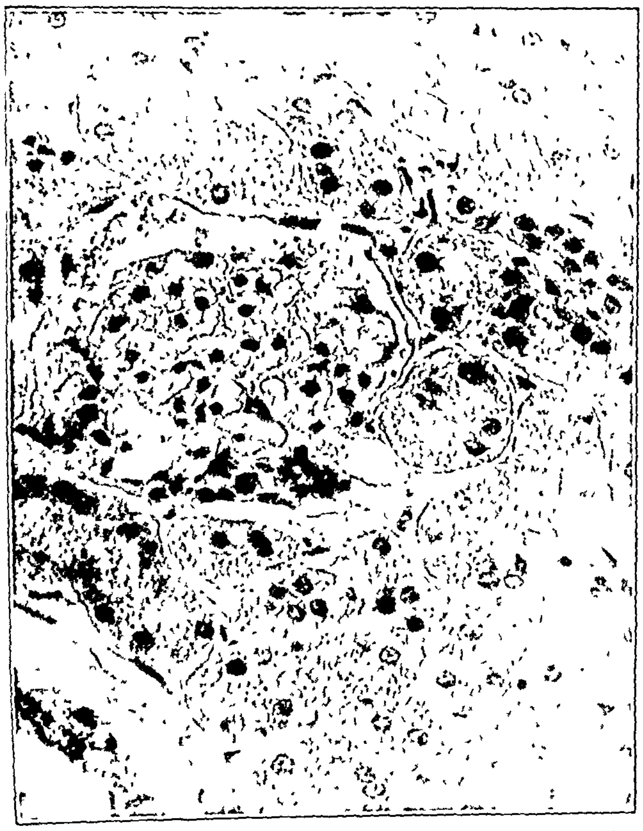

Fig. 6.—Experimental scarlatinal nephritis in the rabbit, showing early crescent formation of Bowman's epithelium.

Still another significant change occurring in the affected glomeruli is the formation of the "epithelial crescent," which invariably begins in the tubule portion of the capsule and in consequence causes a complete blocking of the entrance to the latter. This occlusion by proliferated epithelium is noted for glomeruli in which the tuft seems, in part at least, capable of function (fig. 6).

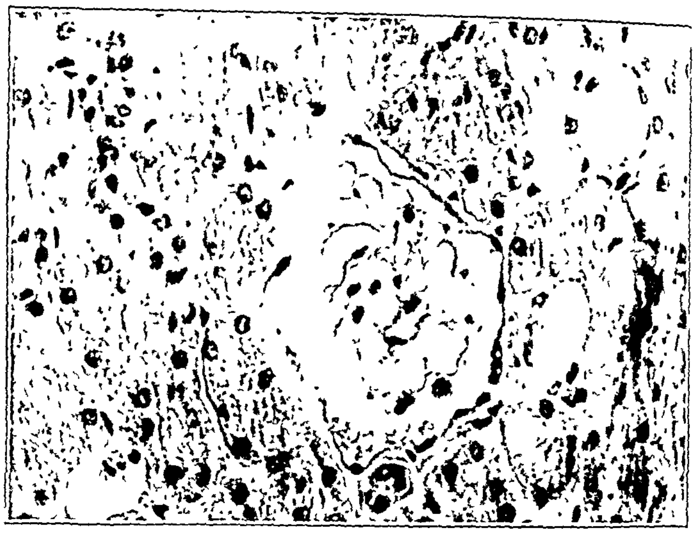

Fig. 7.—Experimental scarlatinal nephritis in the rabbit, showing destruction of the malpighian body.

Tubular changes are not an early feature of the acute parenchymatous nephritis. Often no epithelial alterations are observed except where the corresponding glomerular tuft is apparently destroyed. In these instances the tubule shows a swollen and granular condition of the lining epithelium, particularly of the convoluted portion. At this stage, desquamation of tubular epithelium and its appearance in the form of casts is frequently noted (fig. 8).

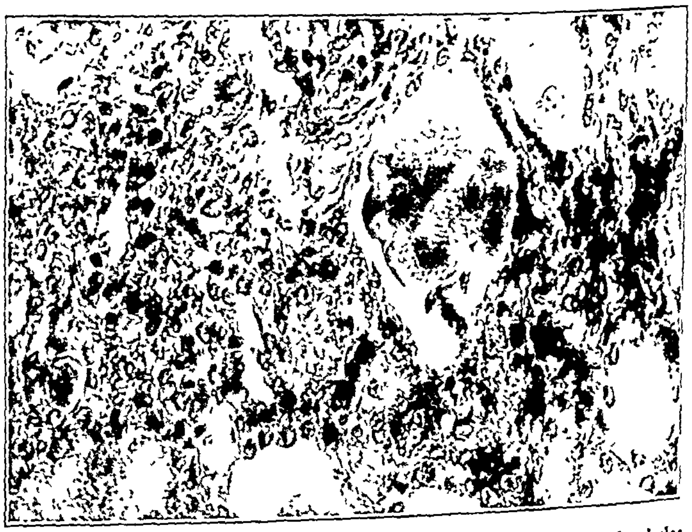

Fig. 8.—Experimental scarlatinal nephritis in the rabbit: dilated tubules with epithelial casts.

In certain of our experiments in which one of the rabbits previously immunized against the hemolytic streptococcus of scarlatina died as a result of a subsequent injection of the homologous "lysate," chronic interstitial lesions were noted in the kidneys (figs. 9, 10 and 11). These chronic changes were essentially reparatory and undoubtedly the sequence of some previous injury to the parenchyma. Whether the primary glomerular injury induced experimentally with the streptococcus may inaugurate secondary chronic changes in the stromal tissues can only be conjectured at this writing. Although we have never observed in our laboratory experiences the occurrence of spontaneous chronic diffuse nephritis in the rabbit, we understand that this condition may occur in this animal. Further experiments in which the chronic lesions occur regularly under specific conditions are necessary before any conclusions can be drawn regarding the specificity of the interstitial change or its relationship to the acute glomerular nephritis experimentally produced with *Streptococcus scarlatinae*.

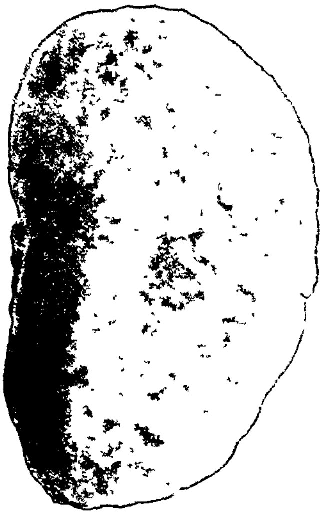

Fig. 9.—Rabbit kidney of chronic interstitial nephritis.

SUMMARY

The various types of acute glomerulonephritis, including the epithelial "crescent," endothelial proliferation, hyaline thrombi in the vessels of the glomeruli, hemorrhage into the capsular space, and complete necrosis of capillary tufts, can be produced experimentally in the rabbit under prescribed conditions, with the toxic principle of the scarlatinal streptococcus of the Dicks.

The experimental production of the nephritis here reported is of unusual significance, since it affords the opportunity to study the acute lesions in the order of their related sequence, and may form a means of tracing the changes that lead to a progressive diffuse nephritis. Furthermore, it opens a field of investigation that may lead to our better understanding of the causes and mode of production of certain forms of renal disease in man.

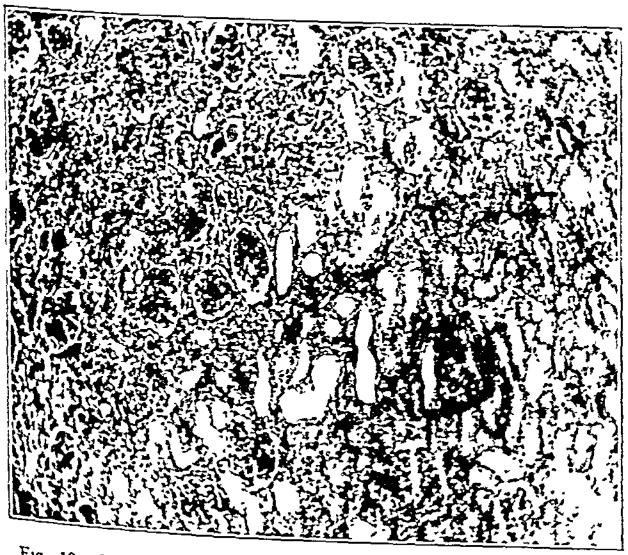

Fig. 10—Section of rabbit kidney of chronic interstitial nephritis.

Streptococcal nephritis induced in the rabbit, and its complete analogy to the nephritic lesions of human scarlatina, is of especial interest since the causal excitant is in keeping with injurious substances more likely responsible for nephritis in man. While experimental nephritis has been produced with substances such as cantharides, snake venom and uranium, these are improbable excitants of the human disease and for this reason have not afforded an accurate basis for comparative study.

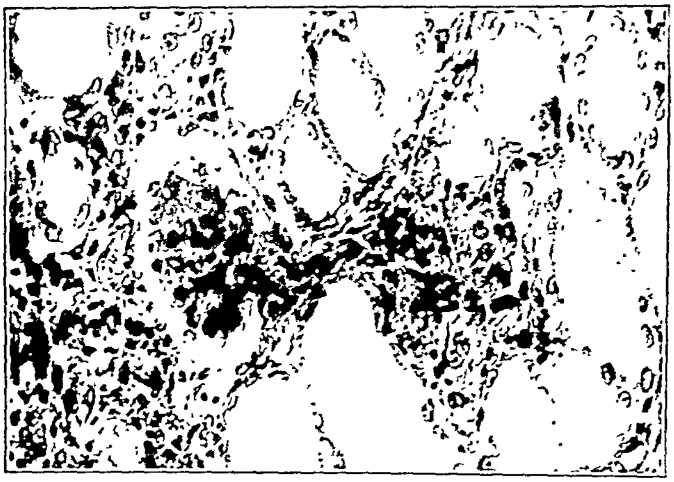

Fig. 11.—Section of rabbit kidney showing dilated tubules and glomeruli undergoing organization.

AVITAMINOSIS IN THE COURSE OF DIABETES

OCCURRENCE IN A CASE, WITH SYMPTOMS AND LESIONS OF BERIBERI PREDOMINATING *

MICHAEL G. WOHL, M.D.
OMAHA

Among the many diseases classified as avitaminosis, beriberi and keratomalacia have received considerable attention from both the clinical and the experimental points of view. Although the exact determining cause of beriberi has not been absolutely proved, there seems to be a unanimity of opinion that vitamin deficiency in food is an essential if not the sole factor in its genesis. The human feeding experiments with decorticated rice conducted by Fraser and Stanton [1] would indicate this; and animal experiments conducted by Eijkman in Java [2] have established the fact that polyneuritis gallinarum in fowls, which is analogous in a number of symptoms to human beriberi, results from a deficiency of neuritis-preventing vitamin in decorticated rice.

The classic experiments of E. V. McCollum [3] and his co-workers, Osborne and Mendel,[4] have established that keratomalacia is essentially a disease following a lack of the fat-soluble vitamin A.

In this country, patients presenting symptoms of beriberi or of keratomalacia are rather uncommon. In view of the great number of patients who are on restricted diets, this is somewhat surprising. I feel, however, that there must be a greater number of cases that show individual symptoms of these diseases, but they pass unrecognized as such.

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* Read before the Section on Pathology and Physiology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Fraser and Stanton: Institute for Medical Research Federated Malay States, 1909, No. 10.

[2] Eijkman, quoted by Vedder, in Tice: The Practice of Medicine **9:** 189.

[3] McCollum, E. V.: Pathologic Effects of Lack of Vitamin A and of Antirachitic Vitamin, J. A. M. A. **81:** 894 (Sept. 15) 1923.

[4] Osborne, T. B., and Mendel, L. B.: Ophthalmia and Diet, J. A. M. A. **76:** 905 (April 2) 1921.

That an occasional symptom of avitaminosis may develop during the course of a strict dietary regimen was recently stressed by Crohn and Rosenberg,[5] Schwartz[6] and McCarrison.[7] Crohn and Rosenberg observed in two patients who were suffering from ulcerative colitis, and who were on a diet restricted to vegetables soups, cereal gruels and meat broth, the development of corneal and conjunctival inflammation similar to xerophthalmia, a condition due to a deficiency in fat-soluble vitamin A. They attributed the ocular phenomena to avitaminosis because the patients promptly recovered from xerophthalmia on a changed diet. Schwartz reported a case of an infant whose diet was restricted for therapeutic purposes to oatmeal water and Mellin's Food in water. This constituted the entire diet regimen for a period of twenty-two days. Characteristic symptoms of keratomalacia developed. The patient recovered following the administration of cod liver oil.

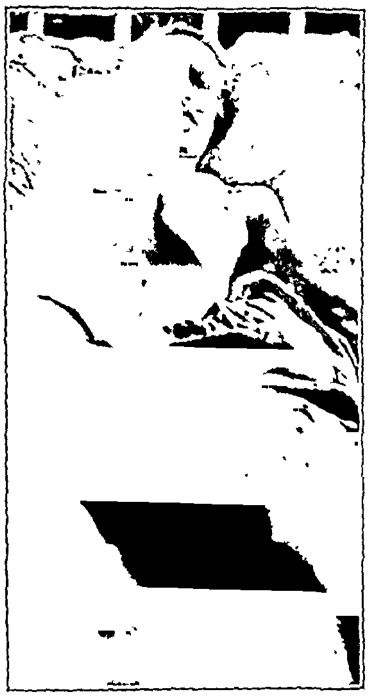

Fig. 1—Appearance of patient on deficient diet for a year.

McCarrison states that:

> Disturbances of metabolism resulting from avitaminosis are bound up and are in a considerable measure dependent on disturbances *of endocrine function which result from the same cause.* Evidence has been advanced of the deleterious effects of food deficiencies on the organs responsible for digestion and assimilation. The endocrine organs influence those of digestion both by their hormones and through the sympathetic nervous system. Food deficiency deranges both the normal production of hormones and the functional perfection of sympathetic nervous control. Consequently the digestive organs are *deprived of the full advantage of the efficient regulation and correlation which normally* they would derive from normal, healthy endocrine action.

I have studied both the clinical and the postmortem records of a patient that came under my observation who developed during the course of a restricted diabetic diet the cardiac-neurotoxic complex to analogous beriberi and the eye symptoms suggestive of xerophthalmia. The case will be described in detail below.

Based on the study of the literature pertaining to the subject, and on the careful investigation of our case, a few points suggested themselves, deductions from which seem sufficiently cogent to merit mention here. They are at present of theoretical character, however, and I expect in the future to subject them to experimental proof.

THEORETICAL ASPECT

There occur certain symptoms during the course of diabetes which we have heretofore attributed to the diabetic condition which cannot reasonably be explained by the disease as such. In treatment we have focused our attention on the fundamental food categories—protein, carbohydrate and fat—and have paid little attention to vitamins and inorganic substances, such as iron, calcium and phosphorus. Since diabetes is a protracted condition, and since a diet must be continued for a long period, it may, if insufficient in vitamins and inorganic substances, give rise to symptoms of avita*minosis in masked form.*

Take, for example, the extreme muscle weakness that forms a conspicuous symptom in many cases of diabetes. The daily loss of sugar and nitrogen, with the *resultant loss of "calories"* would hardly serve as a logical explanation for the same. We have often seen patients whose carbohydrate tolerance was not low, yet whose asthenia was most marked. Allen[8] believes *that the asthenia is an evidence* of a specific endocrine deficiency.

The recent work of McCarrison,[7] Mouriquand,[9] and Wolbach and Howe[10] has established that food deficient in vitamins will produce marked histologic changes in animal organs. Wolbach and Howe's specific tissue changes consisted in replacements of various types of epithelium by stratified squamous keratinizing cells. Atrophy of the glands of internal secretion, with hypertrophy of the suprarenals, is a striking phenomenon demonstrable histologically.

The deficiency need not necessarily be complete. Partial deficiency, when protracted over long periods, acts just as certainly as extreme deficiency over short periods. Is it not possible, then, *that the symptoms of asthenia could be* accounted for on the basis of histologic changes induced by avitaminosis in endocrine glands?

The neurologic signs and symptoms of diabetes have not been adequately explained. Williamson,[11] Schweiger[12] and Kraus[13] find a degeneration of part *of the intramedullary portion* of the *posterior roots as the anatomic cause.* Of eighty cases studied in the diabetes department of Mercy Hospital, Council Bluffs, Iowa, and the Paxton Memorial Hospital, Omaha, from July 1, 1924, to Dec. 1, 1925, we have encountered twenty-two patients with symptoms of paresthesia, partial loss of knee jerks, and neuralgic pains, particularly in the calves. Only in one instance did we find a true multiple neuritis with atrophy *of muscles and complete* loss of knee jerk and Achilles reflex.[14] Ten of these patients had acetone in the urine, and all of them presented hyperglycemia; the cases varied in duration from three to six years. A careful inquiry into the dietary habits of the twenty-two patients, preceding or following the diagnosis of diabetes, disclosed the striking feature in sixteen of them that they consumed food poor in vitamins, such as potato, bread and meat, but very little of fresh vegetables, eggs and cream. Focal infection, alcohol, syphilis or tuberculosis as causes of neuralgic pains were ruled out, with the exception of tuberculosis in one case and syphilis in another. Is it not possible that the neuralgic pains were due to a disordered metabolism of nerve cells, with more extensive degeneration incident to avitaminosis when continued for too long a time? The acidosis or hyperglycemia might hasten the symptoms by overloading the oxidative mechanism.

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[5] Crohn, B. B., and Rosenberg, *Herman:* The Medical Treatment of Chronic Ulcerative Colitis, J. A. M. A. **83:** 326 (Aug. 2) 1924.

[6] Schwartz, A. B.: Nutritional Keratomalacia, J. A. M. A. **85:** 2025 (Dec. 26) 1925.

[7] McCarrison: Deficiency Diseases, Oxford Medicine Press.

[8] Allen, F. M.: Am. J. M. Sc. **161:** 350 (March) 1921.

[9] Mouriquand, G.: Presse méd. **33:** 1473 (Nov. 7) 1925.

[10] Wolbach, S. B., and Howe, P. R.: J. Exper. Med. **42:** 753 (Dec.) 1925.

[11] Williamson: Brit. M. J., 1894, p. 398; Lancet **1:** 855, 1905.

[12] Schweiger: Arb. a. d. Neurol. Inst. a. d. Wien. Univ. Obersteiner, 1908, p. 391.

[13] Kraus, W. M.: M. Clin. N. America, 1920-1921, p. 228.

[14] No attempt is being made here toward a neurologic classification of these cases.

Constipation is a common symptom of which patients with diabetes complain. It is true that the insufficient bulk of food and the polyuria, causing the abstraction of water from the gastro-intestinal tract, leaving the fecal contents in a dry state, might account for this symptom in some of the cases. However, there are patients in whom under proper care the polyuria diminishes, who take a large bulk of food, who exercise, and who still present constipation as a persistent symptom. Sir Arthur Keith[15] has called attention to two anatomic factors of primary importance in chronic intestinal stasis, occurring in food deficiencies: (1) the defective action on the part of the abdominal musculature, and (2) the lesions of the neuromuscular system of the intestine. The histopathologic changes occurring in deficiently fed pigeons and monkeys would indicate an atrophy of muscle tissue, as well as a disorder function or actual degeneration of the nervous tissue throughout the body. The abdominal muscles and the nerve elements controlling them necessarily suffer as well. Gross[16] found that vitamin B deficiency produces in rats real intestinal stasis. The most remarkable point in his experiments is that the intestine seems to feel the need of vitamin B almost immediately. The idea that constipation in diabetic patients is possibly dependent on the improper food rather than the diabetic condition as such is not inconsistent with the foregoing facts.

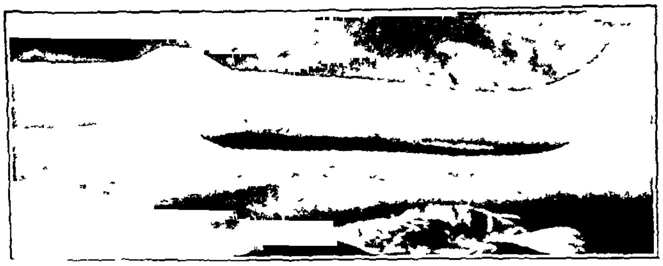

Fig. 2.—Swelling of knees and ankles.

In accordance with this line of reasoning, we have given Yeast Vitamin B Concentrate (Harris), a total of 800 mg. of the Osborne and Wakeman yeast fraction daily to each of eight diabetic patients that were suffering with obstinate constipation. The results obtained are encouraging; however, these patients are still under observation.

Another speculative point which one may entertain is the rôle that changed conditions with respect to food habits (consumption of rich but vitamin deficient food) play in the increase in the incidence of diabetes. In the United States, sugar consumption (largely sucrose) has increased from 35 pounds (16 Kg.) per person in 1890 to 100 pounds (45.4 Kg.) in 1910.[17] The assumption that by the increase in the carbohydrate intake the pancreas is overburdened and that to this cause may be traced the increase in the incidence of diabetes does not find support in the incidence of diabetes in Japan. The Japanese live on a diet of rice and barley, and Joslin[18] states that the disease is not only less frequent but milder in that country than in ours. May it not be true that it is not the amount of carbohydrate but the form in which we consume it (poor in vitamins) that is one of the many causes for the increase in diabetes with us? Though rice and barley constitute the principal foods of the Japanese, yet the most popular legume in Japan is the soya bean, rich in vitamin B. The lack of vitamins in food, moreover, has a depressant effect on the functional capacity of the pancreas. Funk and von Schoenborn[19] have found a hyperglycemia and a shortage of glycogen in the livers of pigeons suffering from beriberi. They also observed that the administration of yeast tended to lower the blood sugar and increase the store of glycogen in the liver. Gross[16] found no evidence of hyperglycemia in rats fed with a vitamin B deficient diet; however, he confirmed the findings of Funk and von Schoenborn as to the definite effect of vitamin B deficiency in the glycogen content of the liver. Funk[20] suggested that antiberiberi vitamin plays some part in carbohydrate metabolism. An interesting observation has recently been made that for complete oxidation of carbohydrates a sufficient amount of vitamin is necessary. Cooper and Braden[21] have demonstrated that in order to prevent the occurrence of polyneuritis in birds there must be a quantitative relationship between the carbohydrate consumed and the amount of vitamin present in the food.

Kepler,[22] in a recent report of a case of beriberi following excessive use of gloss starch for a period of two years, draws an analogy between beriberi and diabetes:

> In diabetes, a definite amount of carbohydrates must be metabolized to prevent the development of acidosis. To prevent the development of beriberi, a carbohydrate diet must be supplemented with a definite amount of vitamin substance. In other words, the water soluble B vitamin is to carbohydrate metabolism what glucose is to fat metabolism.

The work of Desgrez, Bierry and Rathery[23] has a direct bearing on this. They found that the addition of vitamin B to the diet of patients with diabetes prolongs and increases the effect of insulin.

REPORT OF CASE

History.—Miss X., white, of Danish descent, aged 32, unmarried, referred by Dr. John Holst for relief from her extreme weakness and severe diabetes, had taught school up to six years before, and had enjoyed good health. In the summer of 1919, while her parents were away on a vacation trip, the girl was frightened, and felt indisposed. When her parents returned home she had a rising temperature and complained of diarrhea. This lasted for about a week. She improved and resumed teaching school the same season. During the winter session she began to lose weight, and was extremely fatigued and nervous. She consulted a physician, who found a large amount of sugar in the urine.

The patient was placed on a diet from which the high carbohydrate foods—potato and bread—were eliminated. She continued to show glucose in the urine. With the discovery of insulin, the patient consulted another physician, who placed her in a hospital, began the administration of insulin, and ordered a diabetic diet based on proper principles. She continued to show glucose in the urine and lost ground. The patient received insulin for six months, the daily dose varying between 15 and 25 units. She became extremely nervous and irritable, particularly after insulin administration. The mother discontinued the use of insulin, the patient not being under medical supervision at the time. She continued to give her daughter a diet of about 800 to 900 calories, never exceeding 1,000. The mother, having been taught in the hospital something about diets, restricted the food intake every time she found that the urine contained sugar. The main articles of diet were cereals, such as rice; occasionally eggs and chicken; canned vegetables; small amounts of milk, and butter.

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[15] Keith, Arthur, quoted by McCarrison, p. 224.

[16] Gross: J. Path. & Bacteriol. **24**: 45, 1924.

[17] Emerson, Haven, in discussion on Joslin, E. P.: Changes in the Diabetic Clientele, abstr. J. A. M. A. **82**: 1888 (June 7) 1924.

[18] Joslin: Treatment of Diabetes Mellitus, Lea & Febiger, 1923, p 145.

[19] Funk and von Schoenborn: J. Physiol. **48**: 328.

[20] Funk: J. Physiol. **53**: 247.

[21] Cooper and Braden, in Nelson: Loose-Leaf Medicine, New York **3**, 1921.

[22] Kepler, E. J.: Beriberi from a Diet of Raw Starch, J. A. M. A. **85**: 409 (Aug. 8) 1925.

[23] Desgrez, A.; Bierry, H., and Rathery, F.: Compt. rend. Acad. de sci. **89**: 25 (Jan. 2), 424 (April 17) 1923.

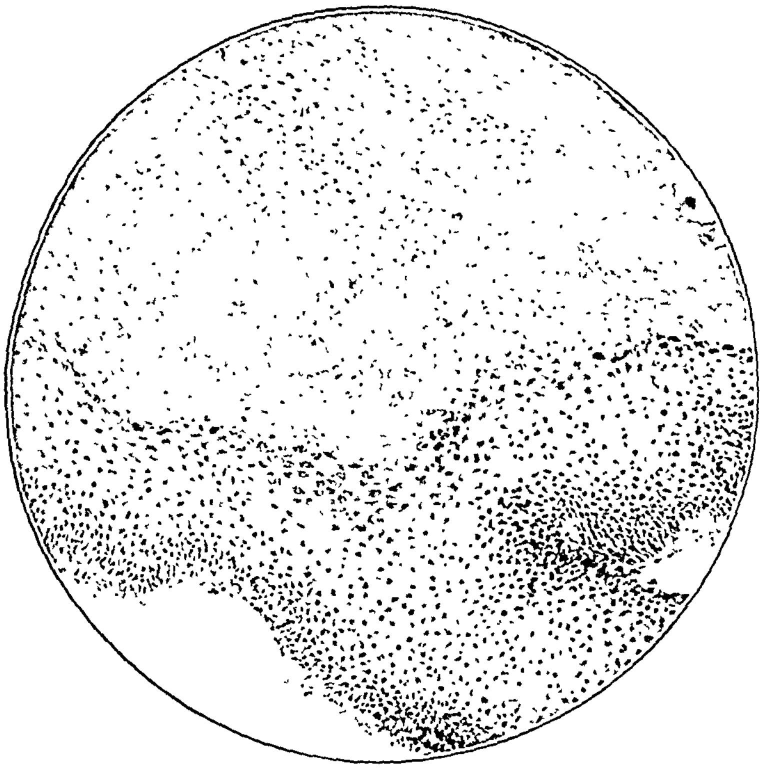

Fig. 3.—Hyperkeratosis of mucous membrane of gum.

The patient received this diet for a year. She lost 50 pounds (23 Kg.) from the beginning of her illness. Six months prior to the time I first saw her she began to complain of pain in her muscles, particularly of the lower extremities. She had "muscle soreness" (as she put it), and heaviness of her legs. She also developed nausea and occasional vomiting, with epigastric distress. She became weak and unable to walk, and took to bed about two months previous to the time I first saw her.

Physical Examination.—The patient was confined to bed. Her mother stated that she was unable to walk without assistance. She was extremely emaciated. Her face was of whitish, slightly cyanotic, tinge. She had a pinched appearance. The right cheek was edematous. She refused to open her eyes because of pain caused by light.

The skin of the extremities was moist and very sensitive to touch. The finger nails were brittle. The subcutaneous tissues over the tibias were edematous. The ankles were swollen.

On examination (by Dr. Holst) the eyes showed opaque, dull, dry corneas. The mother said that when the patient cried, tears did not appear. The lower eyelids on both sides were edematous, the mucous membrane pale and dry. The patient was unable to distinguish correctly objects held before her. The pupils responded to light and in accommodation. The mother stated that ten days previously there was a watery discharge from the eyes.

The lips were poor in color. The teeth were normal. The mucous membrane of the mouth and pharynx was pale and dry. Along the margin of the lower gums there were gray-white patches resembling leukoplakia. The tonsils were small and buried.

No pulsations were visible in the neck. The thyroid seemed normal.

The examination of the heart showed the apex beat in the sixth intercostal space in the midclavicular line. The entire chest heaved with the cardiac pulsations. The heart sounds were rapid and distant. The right border of the heart was 3 cm. to the right of the midsternal line. The left border was slightly to the left of the midclavicular line. At the apex there was heard a soft systolic murmur, not transmitted. The second sound was reduplicated.

The lungs showed no pathologic findings, except a few moist râles at the base of each side.

The abdomen was tender, particularly in the epigastric region. Moderate ascites was detected. The liver was enlarged, one fingerbreadth below costal margin. The spleen was not palpable.

Mentally the patient was dull and listless, and she refused to talk or answer questions. The muscles were wasted and there was a loss of power in both hands and feet. She had to be helped to turn over in bed. The patellar and Achilles reflexes were abolished. Pressure over the calves of the legs and over the muscles of the arms, especially when pressing over the nerve trunk, caused intense pain. (Dr. G. E. Neuhaus made the neurologic examination.)

The temperature was 37 C.; the pulse, 110 per minute; the blood pressure: systolic, 90; diastolic, 60.

Laboratory Examination.—Hemoglobin totaled 60 per cent, Dare; erythrocytes, 2,800,000; leukocytes, 4,200; polymorphonuclear neutrophils, 67 per cent; large lymphocytes, 20 per cent; small lymphocytes, 13 per cent. The erythrocytes showed achromia and poikilocytosis. A blood count taken a week later showed: hemoglobin, 65 per cent; erythrocytes, 2,900,000; leukocytes, 5,400; polymorphonuclear neutrophils, 65 per cent; large lymphocytes, 15 per cent; small lymphocytes, 20 per cent; clotting time, six minutes. The blood sugar was 270 mg.; urea nitrogen, 32 mg.; creatinine, 2 mg. per hundred cubic centimeters. The carbon dioxide combining power of the blood (Van Slyke) was 50 cc. per hundred cubic centimeters of blood plasma. The blood Wassermann reaction was negative. The urine was of straw yellow color; specific gravity, 1.028; reaction, acid; albumin, negative; glucose, 2.5 per cent; acetone and diacetic acid, positive. Microscopic examination showed a few leukocytes and a few epithelial cells.

Diagnosis and Clinical Course of Disease.—The patient's condition was diagnosed as diabetes mellitus, complicated by avitaminosis.[24] It was necessary to rule out scurvy. The absence of hemorrhages in the form of petechiae or ecchymoses in the skin and subcutaneous tissue, the absence of the spongy, bleeding gums, spoke against it. "Famine edema" could be

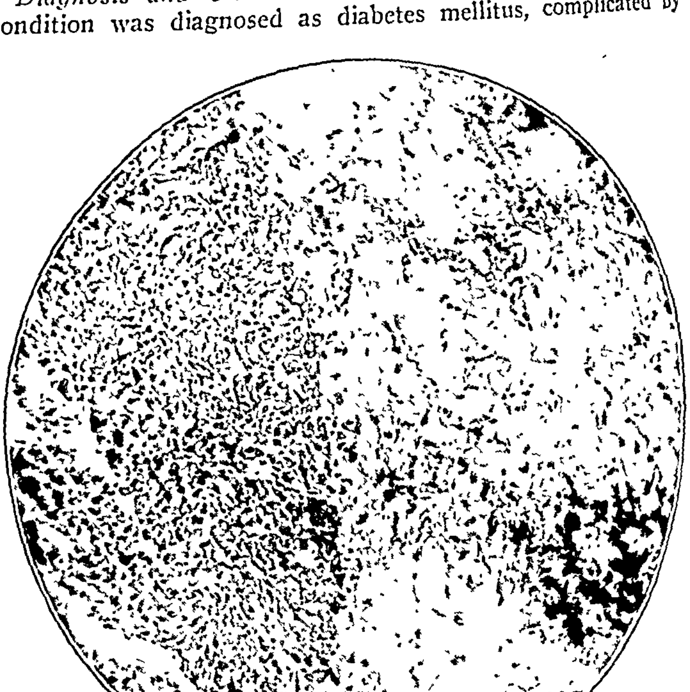

Fig. 4.—Edema of pericardium, hydropic degeneration and fragmentation of heart muscle.

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[24] V. L. Levine, Ph.D., professor of nutrition at Creighton Medical College, with whom I discussed this case, suggested beriberi as the type of avitaminosis.

ruled out because in the latter there are no typical polyneuritic symptoms and polyuria is frequent. The patient was placed on a regular diabetic regimen with 10 units of insulin before each meal. The food was arranged so as to have a variety of leafy vegetables, fruit, eggs, milk, beans, butter, cream, and in addition Yeast Vitamin-Harris, one tablet twice a day, and cod liver oil, 10 minims (0.6 cc.) three times a day, were given; the former tablets containing, according to analysis of E. M. Bailey,[25] 200 mg. of the Osborne and Wakeman yeast fraction and 300 mg. of dried milk powder. From 20 to 30 mg. of the Osborne and Wakeman fraction per white rat daily furnished the necessary vitamin B for normal growth, without other source of vitamin B in the diet. The patient's diet was gradually brought up to 1,900 calories, consisting of protein, 65 Gm.; carbohydrate, 70 Gm., and fat, 140 Gm. The patient began to show improvement. The eye condition cleared up. The patches of leukoplakia improved. She was able to take a few steps with some assistance. The pulse slowed down to 90. Her improvement continued for two months. The urine showed sugar from 0.2 to 0.5 per cent. The blood sugar was reduced to 180 mg. The red blood cells increased to 3,600,000; hemoglobin, 70 per cent. At this stage her mother discontinued the use of insulin, being prejudiced against it. The patient began to have large quantities of sugar and acetone in the urine. She died, Oct. 2, 1925.

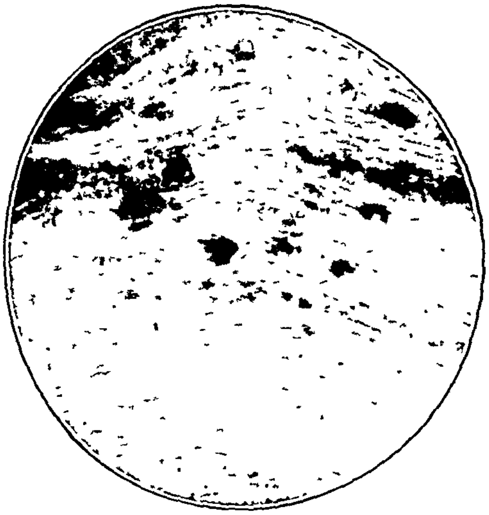

Fig 5.—Vagus nerve: myelin gathered into large irregular globules (staining black with Marchi's stain).

Postmortem Examination.—The examination[26] was held twelve hours after the patient's death. Rigor mortis was marked. The skin was smooth, yellowish white, and rather dry. On the anterior surface of the chest and on the back there was an ecchymotic area the size of a silver dollar. The ankles were swollen. The subcutaneous fat had disappeared. The muscles of the legs were wasted, as were also the muscles of the chest. The muscles presented a dull, grayish appearance. The conjunctiva was roughened; the cornea, somewhat clouded. The mucous membrane of the mouth was dry. There was a leukoplakic spot, 18 mm. in diameter, on the margin of the gum. The peritoneum was somewhat thicker than normal; it was quite edematous. The cavity contained 900 cc. of fluid. The appendix was 3 cm. in length, and had a rather small mesentery to its tip. Each pleural cavity contained 80 cc. of clear, straw-colored fluid. Otherwise, they were normal. The pericardial cavity contained 50 cc. of clear, straw-colored fluid.

The epicardium was edematous. The heart weighed 250 Gm. It was rather flabby. The edges of the mitral valve were slightly edematous. The myocardium had a general dull appearance. The wall of the left ventricle was thickened, measuring 12 mm. in diameter. The wall of the right ventricle was rather thin, measuring 2 mm. in diameter. The valves of the right side of the heart were normal. The coronary arteries were normal.

The lungs showed marked edema and moderate congestion. No nodules were present.

The spleen weighed 140 Gm. The surface was wrinkled. On section, the surface was dark red. The malpighian bodies were not prominent. Trabeculae were visible.

The liver weighed 1,700 Gm. The surface was smooth, and on section the surface was light reddish brown. The consistency was somewhat increased. The gallbladder and ducts were normal.

The mucosa of the gastro-intestinal tract was somewhat injected, but otherwise normal.

The pancreas weighed 30 Gm. It measured 11 cm. in length, 1.5 cm. in breadth, and about 1 cm. in thickness. The surfaces were smooth. It was dull gray.

The combined weight of the kidneys was 300 Gm. The capsules stripped off easily, leaving a smooth congested surface. The cortex of the kidney was 1 cm. thick, and deep red. The glomeruli were distinct. The pyramids, pelvis and ureters were normal. The combined weight of the suprarenals was 11 Gm. They were surrounded by very little fat.

The bladder contained 100 cc. of clear, straw-colored urine.

The ovaries were small and atrophic, and somewhat firm. The tubes were smaller than normal. The uterus was small, measuring 4 cm. in length; the mucosa was congested.

The arch of the aorta showed scattered atheromatous areas, varying in size from the point of a lead pencil to about 18 mm. The abdominal aorta showed similar yellowish, elevated plaques.

The vagus and phrenic nerves were removed very carefully for microscopic section. The brain and spinal cord were not examined.

Microscopic Examination.—Tissue from the margin of the gum showed proliferation of squamous epithelium, with marked hyperkeratosis (fig. 3).

In the pericardium, there was marked separation of the collagen fibers, with many clear spaces.

In the myocardium, the muscle cells were small; a large number of them were vacuolated (hydropic degeneration); there was fragmentation of the muscle fibers with longitudinal separation of the bundles, due to edema (fig. 4).

There was distinct thickening of the intima of the aorta, with poorly staining basophilic material in intima and media.

The lung alveoli were filled with fluid (coagulated by a fixing agent). The epithelial cells lining the alveoli appeared large, almost cuboidal in type.

There was an increased amount of fibrous tissue in the capsule and reticulum of the spleen; the medulla was hyperplastic; there was distinct congestion of the splenic sinuses. There were seen a number of macrophages filled with pigment.

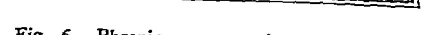

Fig. 6—Phrenic nerve: rather advanced degeneration of myelin (Marchi's stain).

There was edema of the interstitial connective tissue of the liver; the sinuses were distended with red blood cells; otherwise the liver was normal.

Sections from the periphery of the pancreas showed areas of degeneration. Sections from the central parts showed an increase in the interacinous connective tissue; the connective tissue was edematous. A striking feature of sections from the pancreas was the diminution in the number of islands of Langerhans; some of the islands were converted into hyaline masses in which no cells could be detected. The acini were collapsed. The acinous epithelium showed no changes.

The glomerular capillaries of the kidneys were congested; there was edema of Bowman's capsules. The intertubular connective tissue was not increased. There was a striking vacuolization of the epithelium of the tubules. The renal interlobular artery showed thickening of the intima, with poorly staining material in the media.

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[25] Bailey, E. M.: Bull. 240, Connecticut Exper. Station, p. 46.

[26] Drs. A. V. Hennessy and F. H. Foucar, who had had experience with beriberi and war edema, respectively, were present at the postmortem.

Pathologic examination of the vagus and phrenic nerves was done by Thomas L. Houlton, assistant in neuropathology, Creighton Medical School. The vagus nerve, with Marchi stain, showed marked beginning degeneration of many but not all of the fibers; the myelin sheaths were swollen, and the myelin was gathered into rather large irregular globules staining more or less black (fig. 5). In most sections the phrenic nerve showed a degeneration of the myelin quite similar to that of the vagus nerve, except for some sections in which the degeneration was more advanced, the droplets having condensed and being gathered into beads or chains (fig. 6).

COMMENT

The wasting of the muscles, the presence of fluid in the serous cavities, and the degeneration of the phrenic and vagus nerves with the clinical picture speak for a condition analogous to beriberi. The eye condition suggests xerophthalmia as seen in deprivation of fat-soluble vitamin A. When a supply of vitamin A and B was added to the patient's diet, the symptoms disappeared and those of beriberi improved.

It is true that in human beriberi the heart is as a rule enlarged; yet, considering the fact that the patient had been under active treatment with vitamin B for more than two months, and in view of the fact that she suffered general undernutrition, the normal size of the heart would not exclude beriberi. The microscopic examination of the heart would bear out this statement.

To rule out absolutely "famine edema" as a source of some of the symptoms would be nearly impossible, since the patient received for a considerable length of time a greatly diminished caloric intake as well as deficient diet, her general condition being that of malnutrition. She suffered in addition from a general hypovitaminosis, although the symptoms due to the lack of vitamin B were most pronounced.

The patches of leukoplakia in the mouth, we feel, are not a mere coincidence, since they cleared under supply of vitamins A and B. In the light of the recent work of Wolbach and Howe on the epithelial changes following deficiency in vitamin A, they are significant.

The leukopenia is significant in view of the finding by Happ[27] of a constant diminution of leukopoietic activity in animals that were placed on diets poor in vitamin B.

This is the second fatal human case of avitaminosis resulting from incorrect diet reported in the literature with a pathologic description. The only other case, though not in a patient with diabetes, recorded in the literature is that of Wilson and Dubois.[28]

CONCLUSIONS

1. Avitaminosis possibly plays a rôle in the production of such symptoms as constipation and asthenia in cases of diabetes mellitus.

2. Insufficient training of both parent and patient in the care of diabetes may be responsible for such avitaminosis and lead to disaster for the patient.

3. In the case reported, a diabetic patient developed a condition like beriberi and eye lesions somewhat analogous to those of xerophthalmia, as a result of improper diet.

City National Bank Building.

ABSTRACT OF DISCUSSION

Dr. Orlando H. Petty, Philadelphia: Dr. Wohl's patient doubtless had some trouble caused by dietary deficiencies, presumably largely due to avitaminosis. I feel that this work will be of value to us who have to do with strict diets, emphasizing particularly the value of foods containing vitamin A and B especially. I fear that many physicians still hold to the old idea which we can now term only semistarvation. A better understanding and clearer thinking about a properly balanced diet, protein, fat and carbohydrate, as well as vitamins and mineral salts, would avoid all of the catastrophes he presented, especially if the total calories were also considered. From that point of view it has immense practical value. From the point of view of lack of vitamins causing disturbances of endocrine glands, this is problematic, probably hypothetic. I myself feel that the weakness incident to untreated diabetes is due more to the various by-products of a disturbed metabolism than it is to any special food element or failure of a stimulating endocrine gland secretion.

Dr. R. G. Hoskins, Columbus, Ohio: Endocrinology has been grossly overexploited in the interpretation of obscure clinical conditions. It is unfortunate that the suggestion of endocrine involvement is thrown in unless Dr. Wohl has something rather definite in the way of specific indications of such. If there is a sufficient degree of suprarenal hypofunction, for example, to give an asthenia of this degree, there should be other suprarenal symptoms, such as pigmentation.

Dr. Scott R. Edwards, Miami Beach, Fla.: Was there any marked pigmentation of the skin at any time during the course of the disease?

Dr. Petter Bassoe, Chicago: I am interested in the nervous complications of diabetes. I have had occasion to see many cases. It is questionable what the pathogenesis of the nervous symptoms may be. We usually call the condition multiple neuritis, but it is hardly the same as the neuritis following diphtheria or typhoid. There are so few cases with necropsy that I wish to make an appeal to Dr. Wohl to make his report of the nerve condition just as complete as possible. It would be interesting to know whether there are any changes that can be construed as inflammatory in addition to the degenerative ones.

Dr. Michael G. Wohl, Omaha: With regard to Dr. Petty's statement about the weakness caused by by-products of metabolism: I agree with him to a certain extent, yet it is difficult to reconcile the fact that a number of patients after a properly adjusted diet fail to show those by-products and yet continue to present weakness as a prominent symptom. I have in mind particularly a diabetic physician, who on a maintenance diet was free from sugar, acetone and diacetic acid, yet complained of weakness and extreme lassitude for weeks afterward. I have no conclusive proof that the reason for it may lie in changes induced by avitaminosis, yet this may be as good an explanation as any. The pathology of avitaminosis is at present being subjected to a critical study by Dr. Wolbach. We hope that his splendid work will throw some light on this, and that a more scientific explanation may be forthcoming. As to the question of pigmentation: Our patient apparently presented no pigmentation. An important point was brought up by Dr. Bassoe. As I am not a neurologist, I am unable to answer him. The lack of literature on the pathology of diabetes is rather striking. In view of the fact that these patients with neuralgic pains do not come to postmortems, we therefore have no opportunity of getting the nerves for pathologic studies. We shall get at the exact neuropathologic condition when more postmortems on diabetic patients are held; or perhaps when surgery is done, as for instance on the lower extremities, the nerves will be carefully studied. As to the round cell infiltration: I did not make the sections of the nerves. Dr. Houlton has studied them for me. I have asked him the same question, and his reply was that the condition was of a purely degenerative nature, and not inflammatory.

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[27] Happ, W. P.: Bull. Johns Hopkins Hosp. **33**: 163 (May) 1922.

[28] Wilson, J. R., and Dubois, R. O: Keratomalacia in Infant, Am. J. Dis. Child. **26**: 431 (Nov.) 1923.

DEGREE OF MENTAL DEFICIENCY RESULTING FROM CONGENITAL SYPHILIS *

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Various factors have produced the prevailing opinion that congenital syphilis is of serious import as a cause of mental deficiency. In the main, this thought is traceable to early writings on the subject just subsequent to the introduction of the Wassermann reaction and preceding the standardization of the technic. The greater part of these reports are from the medical literature of Europe and consist chiefly of small groups of selected cases The inclusion of these reports with others gave an incidence of 7.8 per cent for congenital syphilis in the feebleminded.[1] Doubt of these early reports prompted the assembling of data based exclusively on American statistics. Here the defects mentioned did not exist, as the reports, for the most part, embraced entire institution populations tested between 1910 and 1925. Five and three tenths per cent of the feebleminded in this country were found to have congenital syphilis. The comparison of this figure with congenital syphilis in the general child population demonstrated that the feebleminded rated 1 per cent higher in incidence than those not mentally affected[2] However, a review of the positive cases[3] in the Wrentham State School provided other facts that tended to negate this apparent higher incidence. Half of the positive cases presented an etiologic background which rendered inevitable the production of a mentally deficient child regardless of the presence of syphilis.

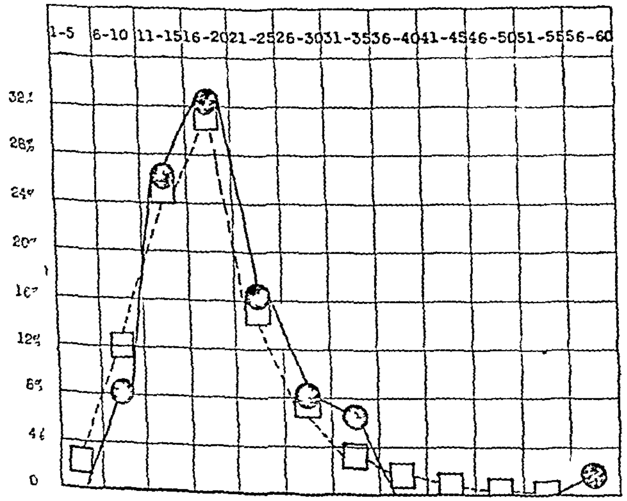

Chart 1—Comparison of chronological ages, in five year periods, of mental defectives with congenital syphilis and mental defectives with negative Wassermann reactions In sixty one positive cases, the average age was 18 41 years, in 1956 negative cases, 18 42 years Solid line with black circles, cases of congenital syphilis, broken line with squares, cases presenting a negative Wassermann reaction

So, purely from the statistical standpoint, congenital syphilis does not occupy a prominent place as a cause of mental deficiency.

At this point, it became evident that a larger question remained unsettled. Up to this time no attempt has been made to determine the extent of the mental defect present in feebleminded persons with congenital syphilis. The study of mental deficiency is fortunate in having a means of judging accurately the degree of mental function present. By means of carefully evaluated mental tests, we have been able to place the impairment of function on a percentage basis and to state, with comparatively exactness, the degree of dysfunction existing at any age. As pathologic studies[4] of the brains of defectives with known mental ratings indicate that mental capacity matches brain complexity, we can gage the amount of injury supposedly wrought by congenital syphilis If it can be shown that a severe degree of defect accompanies congenital syphilis as stated,[5] it is still a serious factor even though the actual number of cases is small

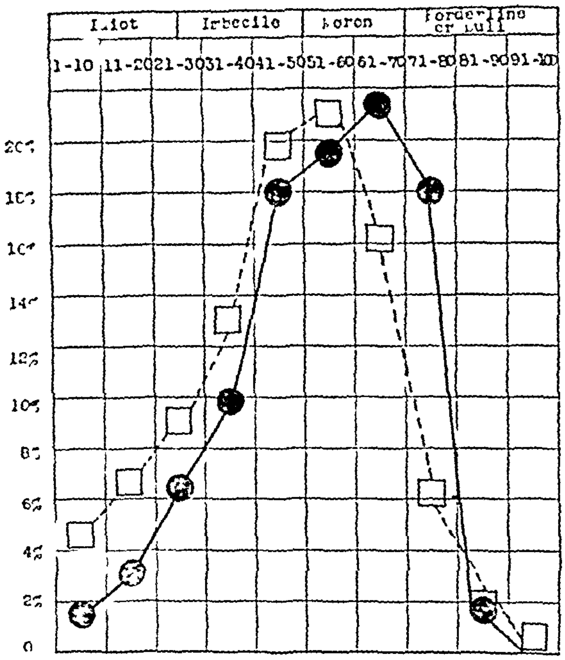

Chart 2—Intelligence comparison (by intelligence quotient) between mental defectives with congenital syphilis and mental defectives with negative Wassermann reaction In sixty one positive cases, the average intelligence quotient was 0 53, in 1,956 negative cases, 0 46

Table 1—*Intelligence of Mental Defectives with Congenital Syphilis*

	Idiot	Imbecile	Moron or Borderline
Dawson W J G J Psycho Asthenics **17**: 70 (Dec) 1912, **18**: 227 (June) 1914	0	18	26
Dayton, N A Boston M & S J **193**: 671 (Oct 8) 1925	4	21	35
Gordon, A Arch Pediat **33**: 273 (April) 1916	2	9	28
Higgins, W H Am J M Sc **155**: 549 (April) 1918	0	1	20
Moulton, A B J Psycho Asthenics **18**: 222 (June) 1914	2	6	8
Raeder, O J Am J Dis Child **21**: 210 (March) 1921	0	0	12
	17	55	129

Few of the writers reporting positive Wassermann reactions in the feebleminded have mentioned the mental status of their patients. A summary of those reported (table 1) shows that the higher grade cases predominate. At this point it is well to remember that the feebleminded are not equally divided into the various mental gradings. The further we go from an intelligence normal, whether it is toward genius or idiot, the fewer we encounter. Among the feebleminded there are few idiots, more imbeciles and still greater numbers of morons and borderline cases.[6] For this reason the results of table 1 are less conclusive than the figures would indicate, but at the same time they show that there is no tendency to the production of lower grade cases.

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* Read before the Annual Meeting of the American Association for the Study of the Feebleminded, Toronto, June 3, 1926

[1] Dayton, N A Syphilis in the Etiology of Mental Deficiency, Ment Hyg 9: 760 771 (Oct) 1925

[2] Dayton, N A Congenital Syphilis as a Cause of Mental Deficiency, I, Statistics, Boston M & S J **193**: 668 671 (Oct 8) 1925

[3] Dayton N A Congenital Syphilis as a Causative Factor in Mental Deficiency, II, Analysis of Cases, Boston M & S J **193**: 671-673 (Oct 8) 1925

[4] Fernald, W E, Southard, E E, and Taft, A E: Waverley Researches in the Pathology of the Feebleminded (Research Series, Cases I to X), Mem Am Acad Arts and Sc **14**: 19 128 (May) 1918

[5] Hunt, E L Syphilis of the Nervous System in Children, Am J Syph **5**: 259 267 (April) 1921 Thom, P B Syphilis and Degeneration, J Nerv. & Ment. Dis **53**: 8 17 (Jan) 1921.

OBSERVATIONS

My previous investigations make me believe that congenital syphilis is the cause of mental deficiency in only a few cases. However, for the purpose of making an inquiry into the mental status of these patients, in this paper I consider that the defect present with congenital syphilis is a result of the syphilis.

It was evident that, to obtain a satisfactory criterion of the mental grades associated with congenital syphilis, it would be necessary to compare these patients with a group of feebleminded patients in whom the mental defect was dependent on other factors. To make this comparison, all case records of the Wrentham State School were reviewed from the standpoint of chronological ages and mental ratings. In the patients having a Wassermann test, there were 1,956 negative, sixty-eight positive, and twenty-one doubtful reactions. For obvious reasons seven patients with acquired syphilis and those in whom the reaction was doubtful are not included in the tables. Before a mental comparison could be made, it was necessary to investigate the ages of the two groups, for if there is a preponderance of any particular age group in the positive cases, a corresponding disproportion in the mental ages might result. The first comparison between the negative and positive groups is by chronological ages (chart 1) and shows that, in this respect, there is little variation. As a further safeguard against the possibility of differences in the chronological ages influencing the mental ages, it was determined to use the intelligence quotient of the individual cases for use in making the mental comparison. A marked difference in the intelligence of the two groups is revealed by chart 2. The positive cases show fewer idiots, imbeciles and low grade morons, and more high grade morons and borderline cases than the negative group. In other words, the patients with congenital syphilis will average higher in mental rating than those whose feeblemindedness is due to other causes. In spite of lack of variation in ages of the two groups, it was thought that some of the patients of lower grade might have died in early years and left only those of higher grade. As our school accepts children of all ages down to 2 years, a review of the deaths would reveal any preponderance of lower grade cases showing syphilis. Of 228 deaths over a seventeen year period, there were two patients with a positive Wassermann reaction. These died at the ages of 23 and 57, respectively, and one was a high grade imbecile and the other a moron.

CONCLUSIONS

The intelligence of sixty-one patients with mental deficiency with congenital syphilis considered in this communication is definitely above that in 1,956 cases due to other causes. When congenital syphilis initiates the pathologic process resulting in mental deficiency, the process is less severe, and a higher average of intelligence is attained than in cases with other causation.

From the statistical point of view, congenital syphilis does not produce large numbers of cases of mental deficiency. When we consider the intelligence, congenital syphilis does not produce a low grade of defect. Therefore, from both the quantitative and the qualitative points of view, congenital syphilis is not a serious factor in the production of mental deficiency.

THE THERAPEUTIC VALUE OF THE PARATHYROID HORMONE [*]

J. B. COLLIP, M.D.
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The preparation of a stable, physiologically standardized extract containing the active principle of the parathyroid glands is a matter of such recent date that it is impossible at this time to designate with any degree of finality the therapeutic value of the new hormone.[1]

The experimental work in the laboratory has, it is true, gone ahead very rapidly, and it may be definitely stated from the results of this work that the active parathyroid extract is a specific for experimental parathyroid tetany in the same sense that insulin is a specific in experimental diabetes.

With this essential fact established, it was safe to predict that the new preparation would be a specific in hypoparathyroidism in the human subject. Clinical results thus far available entirely justify this view: that is to say, in hypoparathyroidism in the human subject the parathyroid hormone has been shown to be a specific remedial agent.

Our knowledge of parathyroid pathologic conditions is very limited. The underlying cause of postoperative tetany is generally conceded to be an uncomplicated hypoparathyroidism. This may be due to actual removal or trauma of the glands, or it may be due to diminished blood supply incident on the operative procedure. It is in this type of case that the specific effect of the parathyroid hormone has been absolutely established.[2]

An unusual case of what one might term chronic hypoparathyroidism associated with myo-edema and nephrosis has been reported by Davidson.[3] Treatment with thyroid and parathyroid preparations carefully controlled by frequent laboratory studies was successfully carried out in this instance over a period of some months. The patient later died from an acute infection. The postmortem examination disclosed the presence of only two parathyroid glands. These were found in the median position. The right one was apparently normal, while the left one was somewhat atrophied.

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[6] An instance of this is seen in the material of the present paper. Of the 2,045 patients considered, 16 per cent are idiots, 37 per cent imbeciles, and 47 per cent morons or of higher grade. These figures may be said to represent an institution population only and are not indicative of the actual numbers existing in the general population. The less obvious defects of the morons and borderline patients enable them to pass unnoticed and smaller relative numbers reach the institutions.

[*] From the Department of Biochemistry, University of Alberta Faculty of Medicine.

[*] Read before the Section on Pharmacology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] The literature is reviewed in Medicine 5:1 (Feb.) 1926.

[2] Snell, A. M.: Parathyroid Extract in Treatment of a Case of Tetany, J. A. M. A. 85:1632 (Nov. 21) 1925. Crile, G. W.: Endocrinology 9:301 (July-Aug.) 1925. Lisser, Hans; and Shepardson, H. C.: Ibid. 9:383 (Sept.-Oct.) 1925.

[3] Davidson, J. R.: Canad. M. A. J. 15:803 (Aug.) 1925.

The parathyroid hormone has been used in the treatment of infantile tetany. It is probable that there is something more than simple hypofunction of the parathyroid glands in this condition. The parathyroid hormone will no doubt be a useful agent in the treatment of spasmophilia, but it will remain for future research to determine the exact relationship of the parathyroid glands to this clinical condition.

The function of the parathyroid hormone is in the main related to calcium and phosphorus metabolism. It is possible that the parathyroid glands subserve other functions, and it is also possible that there may be other hormones in these glands of which we have no knowledge at present. Until such information is available, we must confine ourselves to known facts.

The facts about parathyroid physiology may be briefly stated as follows:

Experimental parathyroid tetany is characterized by a lowered calcium content of the blood serum and as a rule an increase in the inorganic phosphorus.

The parathyroid hormone, when administered by injection to dogs in a state of parathyroid tetany, causes the blood calcium level to be restored and the inorganic phosphorus if increased to be decreased. There is also the restoration of the animal to an apparently normal ondition. There is also noted a definite quantitative relationship between the dosage administered and the calcium mobilizing effect produced.

Normal dogs which have been injected with an active parathyroid extract manifest an increase in the blood serum calcium which is proportionate to the dosage administered.

Overdosage effects which may result in death have been produced consistently in both normal and parathyroidectomized dogs.

The main physiologic action of the parathyroid hormone as seen by the laboratory worker is that of a blood calcium mobilizer. It is assumed that the level of blood calcium is normally maintained by the continuous liberation of newly elaborated hormone by the intact normal glands.

It would therefore seem logical to conclude that the parathyroid hormone will be of definite therapeutic value in any condition in which the blood serum calcium is below the normal value. The clinical proof of these predictions must, however, be forthcoming before we can authoritatively state the exact therapeutic value of this hormone.

Blood serum calcium has been shown to be lowered in postoperative tetany, in spasmophilia, in tropical sprue and in certain types of nephritis. Recently Powers[4] has reported lowered blood serum calcium values in certain cases of whooping cough. The value of treatment with the parathyroid hormone in all of these conditions as determined by studies of a large number of cases in each group will be awaited with great interest.

It is not improbable that the parathyroid hormone may have a therapeutic value in certain conditions in which the blood serum calcium is not necessarily lowered.[5] Dr. Aub has obtained suggestive results in cases of lead poisoning treated with the parathyroid extract. A condition of hypercalcemia induced by the parathyroid treatment would seem to facilitate the elimination of lead.

Not wishing to play the rôle of prophet, I will not venture further in this field but rather suggest to the clinicians that a potent parathyroid extract is now available which has the specific effect of mobilizing calcium in the blood stream. If one is desirous of influencing profoundly calcium metabolism, the new hormone may be employed as the therapeutic agent.

ABSTRACT OF DISCUSSION

Dr. Robert S. Dinsmore, Cleveland: Fortunately, postoperative tetany is a rather infrequent occurrence. In mild cases the symptoms may occur at any time during the first twenty-four hours after operation. The patient complains of a tingling sensation and of numbness all over the body, with some degree of nervousness; and circumoral pallor is present. However, such cases are usually transient. Some one of this group of patients may develop the typical severe tetany with generalized convulsions and carpopedal spasms of the hands and feet, in which the hands assume the typical "accoucheur" position, the hands being often drawn across the chest. Formerly it was our routine procedure to give calcium lactate, 20 grains (1.3 Gm.) every four hours, and parathyroid extract, 1/10 grain (6 mg.), three times a day, with thyroid extract, 2 grains (0.13 Gm.) once a day. If the patients developed a true tetanic convulsion, one could be reasonably sure that they would develop other attacks on succeeding days. This has not been the case since we began the use of Dr. Collip's hormone during the past year. We now see only an occasional case in which there are two attacks of tetany. In other words, one injection carries a patient through possibly an entire operative period. We have also seen a small group of chronic cases, and this drug has been just as effective in this group. However, in this group the calcium content was often not lowered, and it was not increased after an injection of the hormone; but the symptoms were always entirely relieved. We are now carrying this group of chronic cases along by injections of the hormone.

Dr. Norman M. Keith, Rochester, Minn.: There are two points in this paper that are of interest not only to the physician but also to the physiologist. The first is that in a few of these cases, after they have been carried along for a certain length of time, they do seem to need calcium as well as the parathyroid hormone. What the explanation of this is I do not know. There is no doubt that in those cases of accidental surgical injury of the parathyroid at operation the patients can be kept healthy and well by the combined use of calcium and the hormone. The other point I wish to bring out is that animals that are given successive doses of the hormone developed a very viscous, thick blood with a decreased volume. Such observations are characteristic after dehydration; they are also characteristic of certain types of collapse and certain types of surgical shock. The blood pressure in the latter conditions may be low. Will Dr. Collip tell us whether he made blood pressure determinations in dogs given repeated injections of the parathyroid hormone?

Dr. Martin B. Tinker, Ithaca, N. Y.: The surgeon should be especially grateful for Dr. Collip's investigations. With increasing numbers of operations for goiter each year, there is also an increasing number of patients having secondary operations. These patients have adhesions to a greater or lesser degree, which increase the trauma of operation and occasion the development of tetany in some instances. At least, we have found that if these patients can be carried past the first few days following operation, they get on splendidly. Of course, surgeons should be careful regarding the portion of thyroid overlying the vessels where the parathyroids are most frequently located. In my experience about two patients out of 500 operated on yearly develop tetany, and would probably die if they did not have some means of overcoming it. Possibly the work of Dr. Simpson of the department of physiology at Cornell University has not come to Dr. Collip's attention. Dr. Simpson did much work on the thyroid and parathyroid, especially in sheep, and his results confirmed Dr. Collip's. Unfortunately, Dr. Simpson died recently and his results may not be reported as satisfactorily as they would have been had he lived.

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[4] Powers, G. F.: Tetany as a Cause of Convulsions in Whooping Cough, Am. J. Dis. Child. 30: 632 (Nov.) 1925.

[5] Petty, O. H.; Stoner, W. H., and Schaffer, H. W.: Therap. Gaz. 50: 173, 1926.

Dr. Orlando H. Petty, Philadelphia: Our clinical studies with parathyroid hormone furnished by Dr. Collip have proved definitely that the hormone will raise blood calcium as it did in the dog. However, we found no serious symptoms of poisoning even with a marked elevation of blood calcium, in one case the calcium being elevated above 16 mg. per hundred cubic centimeters of blood. We have reported a number of cases in which Collip's parathyroid hormone was used. Serum calcium was invariably raised by this hormone, and clinical improvement followed in certain cases of infantile tetany, chronic ulceration, etc. I attended a young man who had myasthenia gravis of a severe type. Blood calcium estimation showed 7.3 mg. per hundred cubic centimeters of blood. Parathyroid was administered, 30 units daily, and his blood calcium soon rose to above 12 mg. The patient rapidly improved, and within six weeks was back at work again. In this case a definite lowering of calcium and improvement followed the administration of Collip's hormone after there was a definite rise in the blood calcium. His blood calcium has remained normal for several months without further administration of the hormone, and he is continuing his usual labors.

Dr. Frank C. Neff, Kansas City, Mo.: About a year ago Dr. Collip furnished some of this extract to the University of Kansas. At that time we had three cases of infantile tetany. These three patients were children who had frequently repeated convulsions. These children were being fed on condensed milk. The blood calcium in all those three cases was markedly below normal and within the danger limits of convulsions, about 7 mg. The children had the other symptoms of tetany. In all these cases the blood calcium was increased by the daily administration of Dr. Collip's extract. For a few days 1 cc. of the extract was administered every four hours hypodermically. It had a marked effect on the elevation of the calcium within a few days. In one case the calcium rose above normal. Recently I have been using the present extract in a similar case once daily, 1 cc. hypodermically, and the calcium is gradually rising. From our limited experience, it seems to me that the parathyroid extract in tetany has a definite effect on the calcium storage in the blood. In two infants who are being followed up there has been no return of convulsions.

Dr. J. B. Collip, Edmonton, Alta.: The case reports presented indicate that the hormone has a definite therapeutic value. Dr. Keith asked about the effect of hormone overdosage on blood volume. In the second half of overdosage experiments (dogs being used) there is noted a great increase in the hemoglobin content of the blood and a corresponding decrease in the plasma volume. We have no absolute data at present on the change produced in the total volume of circulating blood, but it may be assumed that it is definitely decreased.

Treatment of Leprosy in Philippines.—The population of San Culion is about 5,300 per year; hence leprosy is an exceedingly important item in the economic problem of the Philippines. There were a total of 531 positive cases treated during a three year period. Of these, 86 per cent were nodular on admission; 7 per cent were macular; 4 per cent were mixed, and 1 per cent were anesthetic. Twenty-eight per cent of all the positive cases gave an average of one year duration of illness before admission to the hospital. The greatest number (132) averaged 30 years in age. From the males (383) were derived 136 negatives; from the (148) females forty-two negatives. Seventy-seven per cent of the positive cases received the chaulmoogra ethyl ester with 0.5 per cent iodine. The average percentage of cures from Jan. 1, 1922, to Feb. 8, 1925, was 37 per cent.—*Rev. Filipina de med. y farm.*, May, 1926.

URINARY EXTRAVASATION IN RELATIONSHIP TO THE PELVIC AND PERINEAL FASCIA

REPORT OF CASES *

EDWARD WILLIAM WHITE, M.D.
AND
C. OTIS RITCH, M.D.
CHICAGO

Urinary extravasation is of peculiar interest, not only to the urologist but also to the general surgeon and general practitioner. Any clarification as to why urinary extravasation "points" in particular areas is welcome.

Anything that helps to coordinate both surgical and anatomic terms, without the addition of new terms, is a distinct advance, which will be appreciated by those doing perineal surgery. Nowhere else in urologic surgery is the skill of the specially trained urologist over the general surgeon more manifest than in perineal surgery.

THE PELVIC FLOOR, FASCIAE, SHEATHS AND PLANES

From outside inward is, first, the superficial fascia (panniculus adiposus) which is not peculiar to the perineum but is a continuation from other areas of the body. It passes into the scrotum, where it becomes replaced with involuntary muscle fibers and in this region is known as dartos muscle. Over the urogenital triangle it forms two distinct layers: the superficial layer and the deep layer. These are merely subdivisions of the superficial fascia; one should not confuse the superficial layer with the superficial fascia. The superficial layer is distinctly fatty and is continuous with the fat of the ischiorectal fossae and that of the medial surfaces of the thighs.

Case 1 illustrates a deflection of the extravasation by this layer of fascia to the medial surfaces of the thighs and into the ischiorectal fossae.

The deep layer or Colles' fascia is just as distinctly fibrous and spans the urogenital triangle, so that there is an intervening space, the superficial pouch of the urethral triangle, of appreciable dimensions. Its attachments are the same as the urogenital diaphragm. On each side to the rami of the pubis and ischium and posteriorly it is attached to the superficial transverse perineal muscles, and its fibers merge with the urogenital diaphragm to form the base of the urogenital triangle. The bulb and crura are comparatively massive structures in the space. It differs from the urogenital diaphragm anteriorly in that it is not attached, but passes over the scrotum, penis and contiguous parts of the anterior abdominal wall, to become continuous with Scarpa's fascia.

In addition to other structures, the urogenital diaphragm is composed of two densely fibrous layers of fascia—the inferior and superior layers of the urogenital diaphragm. The inferior layer (superficial layer) and the superior layer (deep layer) unite posteriorly to form the base of the urogenital diaphragm, and are conjoined anteriorly to form the transverse ligament of the pelvis. Both layers are attached laterally to the pubic arch. The space between the two layers occupied by the other structures of the urogenital diaphragm is termed the deep pouch of the urethral triangle.

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* Read before the Chicago Urological Society, Dec. 4, 1924.

Extravasation into this space, as encountered in cases 3 and 4, fills this cavity with displacement of the pendulous portion of the inferior layer, with consequent bulging into the perineum. If not relieved, it sloughs through the inferior layer or burrows round the urethra or a blood vessel, since the cavity is an enclosed one, to reach the exterior. In this case, if neglected, its course is the same as that described above.

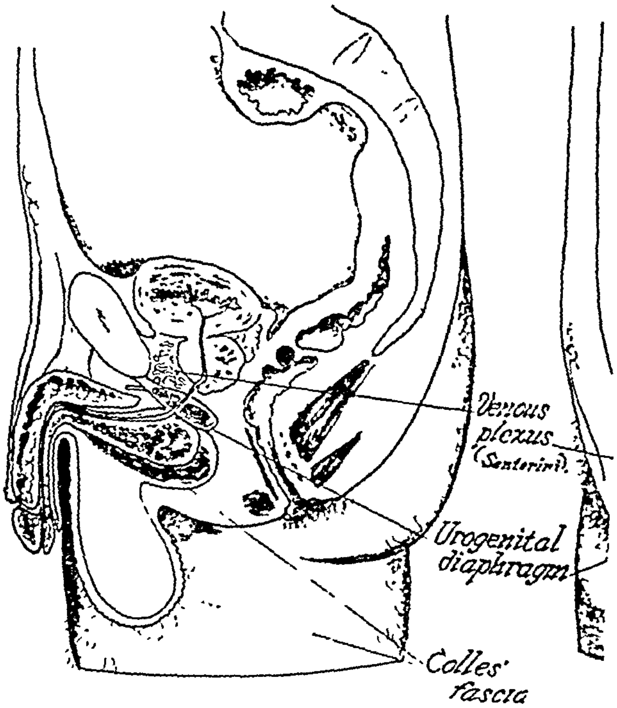

Fig. 1.—Sagittal view of urogenital diaphragm and Colles' fascia.

We have no cases in this series in which the extravasation progressed through the superior layer.

The superior layer of the urogenital diaphragm is merely a continuation of the parietal layer of the endopelvic fascia, and in order to synchronize urinary extravasation from the urethra, reaching the areolar tissue of the perivesical spaces, as reported by some authors, one must visualize its passage from the deep pouch of the urethral triangle, its course determined by the visceral layer of the endopelvic fascia, in such manner that it passes between this layer of fascia and the prostate and seminal vesicles to reach the perivesical tissues. In this connection it is well to remember that the visceral layer of the endopelvic fascia divides into three parts; one goes behind the rectum, another over the bladder and still another to the prostate. The latter is known as the rectovesical fascia, the posterior layer of which is designated by surgeons as Denonvillier's fascia.

This series includes thirty-seven cases covering the last five years. No cases before this series are included in this study because some of the records are not complete. Nor have we included the single case of rupture of the pendulous portion of the urethra in which we found it unnecessary to operate. In two cases, or 5.4 per cent, the extravasation was deflected by the superficial layer of the superficial fascia. In five cases, 13.5 per cent, the extravasation was between the deep layer of the superficial fascia and the inferior layer of the urogenital diaphragm. In the other thirty cases, 81 per cent, the extravasation involved the urogenital diaphragm or its contained structures, notably the sphincter urethrae membranaceae.

The cases reported are representative of the different types of extravasation, and only those facts that are pertinent to this particular study are presented.

REPORT OF CASES

Case 1.—J. G., aged 35, white, widowed, who entered the Alexian Brothers Hospital, June 15, 1923, had had gonorrhea fifteen years previously with no known complications. For the past six or eight months he had noticed that the urinary stream was small, slow and of little force, and required quite a straining effort to start the stream. He paid little attention to this condition until six weeks before admission, when he was unable to void at all. Some proprietary kidney pills relieved the retention, but following the ingestion of these he had marked hematuria for two weeks. After this episode he had had no undue symptoms until six days before entering the hospital, when the urinary difficulty returned. Two days before entering the hospital he was again unable to void and consulted a physician for the first time, who referred him to us for treatment.

We first saw him after his admission to the hospital, when examination revealed that he had temperature of 103, pulse 114, and white cell count of 36,000. The perineum was bulging, the overlying skin red and somewhat edematous. Palpation elicited excruciating pain in this region. The skin over the ischiorectal fossae and medial surfaces of the thighs was dark purplish, and obviously gangrenous. Rectal examination was extremely painful. The prostate was large, tense and painful.

Operation, under gas-ether, was not found expedient until four hours after entrance to the hospital, in which time there was remarkable progress of the extravasation. The gangrenous destruction involved not only the ischiorectal fossae and inner surfaces of the thighs, but also the dependent portion of the scrotum, the foreskin of the penis, and the contiguous regions of the anterior abdominal wall. He was found to have strictures of both the anterior and the posterior portions of the urethra, so that in addition to laying open the gangrenous areas an internal and external urethrotomy was done. The destruction of tissue was so extensive that the exact point of urethral rupture could not be ascertained. However, it was determined that the extravasation was deflected by the superficial layer of the superficial fascia.

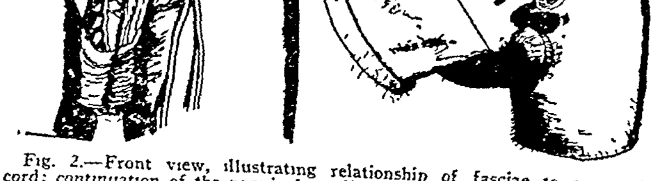
Camper's fascia (Panniculus adiposus) torn away over groin
Scarpa's fascia attached along Po. lig. but deflected over Scrotum, Perineum • Colles fascia

Fig. 2.—Front view, illustrating relationship of fasciae to spermatic cord; continuation of the panniculus adiposus over the anterior abdominal wall and the median surface of the thigh; deep layer of superficial fascia deflected over anterior abdominal wall.

Case 2.—F. L., a farmer, aged 50, white, married, referred by a physician of Hoopeston, Ill., entered the hospital, Aug. 15, 1923. In addition to the usual stricture history, he said that for five or six days previously he had more difficulty in voiding urine than was usual; that two days before he had acute retention, and that following a great deal of straining, to enable him to void, he had aggravated dysuria and shortly tumefaction in the perineum.

The local examination revealed a tumefaction in the perineum about the size of a small orange, apparently necrotic. There was edema and gangrene of the scrotum, foreskin of the penis, and adjacent portions of the anterior abdominal wall.

An external urethrotomy, in addition to laying open the gangrenous areas, was done. At operation the rupture of the urethra was found to be deep to the deep layer of the superficial fascia, or in the superficial pouch of the urethral triangle. Thus the course of the extravasation depended on the deep layer of the superficial fascia.

Case 3.—P. M., aged 40, white, a teamster, referred by Dr. Ralph Wheeler, had fallen astride a wagon coupling, four hours before entering the Alexian Brothers Hospital, May 15, 1924. When admitted to the hospital, he was passing bright red blood by the urethra, but there was no passage of urine. There was a painful mass in the perineum, about the size of a lemon, more or less circumscribed and distinct.

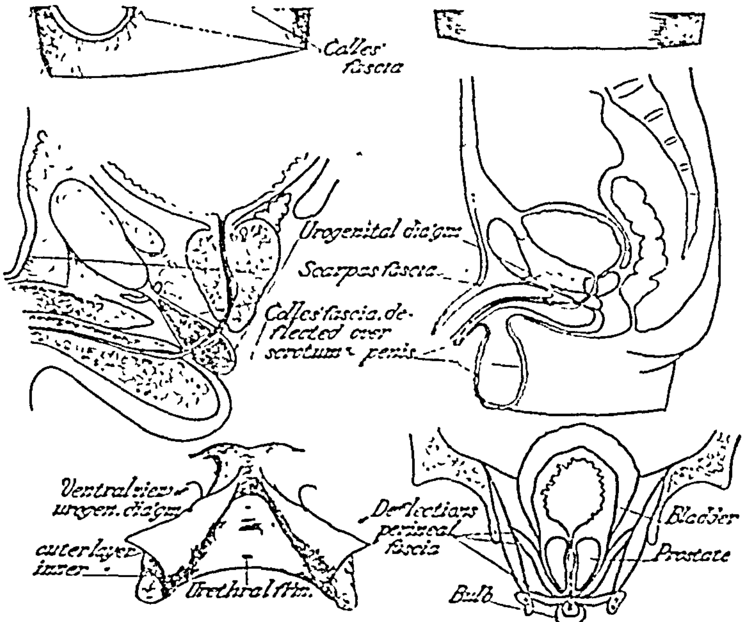
Colles' fascia
Urogenital diag'm
Scarpas fascia
Colles' fascia, deflected over scrotum & penis
Ventral view urogen. diag'm
outer layer
inner
Urethral Ath.
Deflections perineal fascia
Bladder
Prostate
Bulb

Fig. 3.—Sagittal view of fasciae and ventral view of urogenital diaphragm, showing its attachments along the pubic rami.

Operation revealed this mass due to an accumulation of blood and urine about the layers of the urogenital diaphragm, or in the deep pouch of the urethral triangle, producing the perineal mass seen on examination.

Case 4.—A. S. C., aged 53, white, married, a contractor, who entered the hospital, Aug. 19, 1923, had had an external urethrotomy ten years before by one of us (E. W. W.). At that time he was told of the importance of future dilations, but nothing had been heard from him in the meantime. He was suffering from an attack of acute retention, and at this time we were unable to accomplish other than the passage of a whalebone guide by the strictures. This was left in place so that the urine might dribble around it. During the course of the next ten days we were able to pass a no. 8 bougie.

The patient persistently refused operation, and higher dilation was impossible. He was having chills, a temperature of 103, and other typical signs of urosepsis. The patient soon developed a small mass in the perineum about the size of a lime. This mass showed no tendency to spread except toward the surface, where it finally appeared as a small abscess and ruptured. This resulted in a urinary fistula. Finally tiring of the "chills and fever" with the accompanying collapse and depression, as well as the discomfort of the urinary fistula, he consented to operation. November 8, an external urethrotomy was done. The proximal or urethral opening of the perineal fistula was demonstrated at the urogenital diaphragm.

The preceding cases, contrary to common opinion, illustrate three types of urinary extravasation:

Case 1 illustrates the type in which the extravasation is deflected by the superficial layer of the superficial fascia. In case 2, the rupture took place between the deep layer of the superficial fascia and the inferior layer of the urogenital diaphragm, the extravasation making its way behind the former, which over the anterior abdominal wall is called Scarpa's fascia, with subsequent sloughing in this area.

In case 3, the rupture occurred at the urogenital diaphragm, and in order to reach the exterior, must slough through the intervening layers of the fasciae.

Case 4 is presented not because it illustrates a different type but because it is unique in that nature tried to operate by forming a perineal fistula and also by walling off the extravasation, thus preventing extensive necrosis.

No attempt has been made to distinguish between the inflammatory and traumatic rupture of the urethra. For our purpose the results are the same. We have dwelt on the term deflection in order not to convey the impression that it is always possible to determine the exact location of a rupture, for it is well known that in certain cases the malignantly destructive process has destroyed wellnigh all landmarks. But when there is subsequent dribbling, of varying duration, we are safe in saying that the urogenital diaphragm or sphincter urethrae membranaceae has been injured; and when one knows the planes of deflection, one can with an appreciable degree of certainty foretell the point of rupture, prior to operation.

The term "urinary extravasation" is common and is well founded in the minds of medical men. We have no quarrel with those who wish to apply any other term or phrase to any of the conditions referred to above.

CONCLUSIONS

1. Urinary extravasation is serious, and the prognosis should be carefully guarded.
2. Operation must be done at the earliest possible moment to save life and prevent extensive destruction of the urethra.
3. A more comprehensive knowledge of the structure of the perineum, with uniformity of technical terms, would be of inestimable value.
4. Each case is a distinct entity unto itself and should be so considered.
5. Thorough drainage should be established by wide incision of all involved tissue.
6. The postoperative care, with regular dilation, must be done as a routine.

7 West Madison Street.

Food Poisoning from Cheese Streptococcus.—Two outbreaks of food poisoning attributed to cheese have been reported within the year. One outbreak involving nine persons at Biddeford, Maine, was reported in March, 1925, as attributable to eating an imported Albanian cheese. The second outbreak of apparently twenty-two cases in Kansas City, Kan., was reported in February, 1926. The cheese suspected of causing the second outbreak was an American cheddar manufactured in Wisconsin. The reports of the attending physicians in the two cases were similar. The symptoms were: "pains in stomach, severe vomiting, diarrhea, expression dull and pulse fast." Investigation revealed the fact that all the affected persons partook of some cheese. Samples of both cheeses were sent to the Bureau of Chemistry. By bacteriologic examination, only cocci were found, and of these but five proved to be members of the *Streptococcus lactis* type. Members of the paratyphoid-enteritidis group, so commonly reported to be the cause of such outbreaks, were not found. —Linden, B. A.; Turner, W. R., and Thom, Charles: *Pub. Health Rep.* **41**:1647 (Aug.) 1926.

THYROID THERAPY AND THYROID TOLERANCE IN CHRONIC NEPHROSIS *

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My purpose in this communication is to put on record some new observations on the use and effect of thyroid and thyroxin in the treatment of chronic nephrosis. In earlier publications I[1] have drawn attention to certain biochemical features present in chronic nephrosis which also appear in myxedema and other hypothyroid states, chief of which are the hypercholesterolemia and the reduced basal metabolism. Other observers, notably Eppinger,[2] have pointed out clinical resemblances between these two groups of disease, and I have recorded a case of chronic nephrosis which ultimately developed into a genuine myxedema.[3] Moreover, two cases have come under my observation, and I have been informed of a third, in which chronic nephrosis supervened on prolonged irradiation of the neck, involving the chest and thyroid. From these clinical and biochemical studies the conclusion was drawn that the function of the thyroid gland is in some way concerned in the abnormal metabolic phenomena present in chronic nephrosis, and certain principles were outlined for the use of thyroid and thyroxin in the treatment of this disease.

On the basis of the knowledge already recorded, my present task would have been a very simple one were it not for the fact that the general understanding of chronic nephrosis is still confused and uncertain. Before considering the therapeutic application of thyroid in chronic nephrosis, I will digress to discuss some of the questions that need further elucidation.

While most observers agree with my view that chronic nephrosis represents a definite entity, there are some who still class it as a type of nephritis, merely because certain features are common to both nephritis and nephrosis. This conception of chronic nephrosis results from the traditional view which regards most forms of Bright's disease as renal in origin and nature. However, a critical study of the various phenomena presented by the different types of Bright's disease justifies the conclusion that some have a renal and others an extrarenal origin. The use of the term nephrosis in our clinical nomenclature is inappropriate because it accords to the kidney undue importance in the evolution of the condition which it represents, and fails to coordinate both the renal and the extrarenal phenomena into one concept. While this term has perhaps been useful in many ways, it has not obviated the existing confusion, because our attention continues to be focused on the ultimate pathologic changes in the kidneys, rather than on the pathogenic processes responsible for these changes.

In consequence of all this, we find three clinical and pathologic varieties of Bright's disease grouped under the one heading of "nephrosis." They are the genuine, that is, primary nephrosis; the glomerulonephritides with nephrotic manifestations, and amyloid disease of the kidneys. There is some justification for this cogrouping, provided we are quite clear as to our premises. The term nephrosis in reality refers merely to the dominant lesion in the kidneys (tubular degeneration) which is common to all the types mentioned, but it takes no cognizance of the other pathologic manifestations, or as to how they are produced.

In my opinion the extrarenal factors are of prime importance and hence generic. The tubular degeneration is the consequence and not the cause of the disturbance, while the inflammatory processes and amyloid deposits in the kidneys are either independent or incidental. It seems well established that in primary or genuine nephrosis the kidneys fail to show inflammatory changes, and there is no sound reason for believing that tubular degeneration and the lipoid infiltration present in the kidneys are of inflammatory origin. There are strong indications, too,[4] that amyloidosis of the kidneys, which is occasionally seen in association with chronic nephrosis, may in reality not be a distinct and specific disease, but the culminating effect of a protein intoxication incidental to the metabolic perversion of chronic nephrosis.

It is my view that the extrarenal factors which are so striking and unique in chronic nephrosis are the expression of a primary systemic disorder which affects first the protein and later the lipoid metabolism. To this pathogenic process I have applied the name "diabetes albuminuricus," because I believe that the albuminuria of chronic nephrosis is not of renal origin, but is the expression of a profound and general metabolic change.[5] Because of an alteration in some of or all the cells of the body, or a modification (chemical, physical or biologic) in the serum protein itself, as a result of which the body is unable to utilize it for whatever function protein serves, it is excreted by the kidneys as a foreign substance, just as the kidneys excrete other substances from the blood stream which are foreign or which can serve no normal or useful purpose. As in diabetes mellitus, the glycosuria is ultimately the result of a perversion in carbohydrate metabolism, so in diabetes albuminuricus the albuminuria results from a perversion in the metabolic relations of the blood proteins to the body cells. The change implied is a qualitative one. The quantitative changes in the blood serum proteins are due to different causes. The reduction in the amount of the protein is traceable to the drain caused by the albuminuria, while the inversion of the albumin-globulin ratio is due in part to a difference in the rate of excretion of the various blood proteins, and in part to a change in the rate of globulin formation or to cellular disintegration.

The cause of the hypercholesterolemia that is so characteristic of chronic nephrosis is still uncertain. The origin of the cholesterol present normally in the blood is not definitely known; some is undoubtedly exogenous and some endogenous. It is subject to marked fluctuations under a variety of conditions. In some, it appears to be independent of external causes and definitely associated with metabolic disturbances, as in diabetes mellitus and nephrosis. There can also be no doubt as to the relation of the cholesterol content of the blood to the activity of certain glands of internal secretion, such as the suprarenal and the thyroid.

The lipoidemia of chronic nephrosis is obviously different from that of diabetes mellitus, in which it depends largely on the noncombustion of sugar. It is

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[*] Read before the Section on Pharmacology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Epstein, A. A.: The Nature and Treatment of Chronic Parenchymatous Nephritis (Nephrosis), J. A. M. A. **69**: 444 (Aug. 11) 1917; Am. J. M. Sc. **163**: 167 (Feb.) 1922.

[2] Eppinger, Hans: Zur Pathologie und Therapie des menschlichen Oedems, Berlin, 1917.

[3] Epstein, A. A.: M. Clin. N. Amer. **5**: 1067 (Jan.) 1922.

[4] Jaffe, R. H.: Amyloidosis Produced by Injections of Proteins, Arch. Path. & Lab. Med. **1**: 25 (Jan.) 1926.

[5] Occasionally a mild transient glycosuria is associated with this condition.

not associated with ketogenesis, and appears to arise from the peculiar disturbance in the protein metabolism. In intensity and character, the lipoidemia of chronic nephrosis is very like that of myxedema; a fact which, coupled with other comparable features, suggests that it has a common origin in the two diseases.

In seeking an explanation for this phenomenon, we find strong evidence which points to a deficient protein metabolism as the direct cause of the hypercholesterolemia. As Lande and I[6] have pointed out, a certain relationship exists between the basal metabolism and the cholesterol content of the blood. Although not constant, it may be said in general that conditions which depress the metabolic processes of the body cause an increase in the cholesterol content of the blood, while those which augment metabolism cause a decrease. A few words on the particular effect on metabolism in general, of protein feeding, of fever, and of thyroid are in place here, because their influence on the clinical urse of chronic nephrosis is very similar in nature.

tein feeding accomplishes its result by a specific namic action; fever heightens protein catabolism, while thyroid promotes the utilization of protein. Thus we see improvement and cure in some cases after high protein feeding, and in still others after the employment of thyroid.

The foregoing observations indicate that (1) chronic nephrosis, like myxedema, represents a disturbed protein metabolism; (2) the cholesterol content of the blood bears a reciprocal relation to protein metabolism, and hence can be used as an index of that metabolism, and (3) thyroid enhances protein utilization and therefore can be used for this especial purpose in the treatment of chronic nephrosis.

EFFECT OF THYROID EXTRACT

Records show that thyroid extract has been used in a variety of conditions, notably cardiac and renal diseases associated with dropsy. For the most part, its earlier use was based entirely on empiricism and consequently failed to attain any great importance. In 1917, however, Eppinger[2] made a more systematic study of the subject. His use of thyroid, however, had a limited application, for he employed it only in cases in which the edema did not yield to diuretic measures, and forbade its use if the response was not prompt. The dosage which he recommended, as we shall see later on, was far too small to be of any definite service. Thus, while his conception of the therapeutic application of thyroid in the treatment of various edemas had a fairly sound clinical foundation, he failed to realize the true function and value of thyroid in the treatment of chronic nephrosis.

Some of our knowledge of chronic nephrosis is obviously derived from comparisons with myxedema. But, while the biochemistry of myxedema has much in common with that of chronic nephrosis, the relation of the thyroid gland to these diseases is fundamentally different. Hypothyroidism and myxedema are the result of a deficiency in thyroid secretion, varying in degree. The relation of the thyroid to these diseases is therefore causal and generic. While there is no evidence to show that the thyroid gland is diseased in chronic nephrosis, or that its function is subnormal, yet experience indicates that the amount of thyroid required to restore the metabolism of chronic nephrosis to normal is greater than in myxedema. I do not mean to imply by this that in chronic nephrosis the activity of the thyroid gland is deficient or abolished, though that may occur; but I do believe that its activity, whether normal or even increased, is insufficient to cope with the existing metabolic disturbance. This may perhaps account for a number of the clinical points of similarity between myxedema and chronic nephrosis. The distinction might be clarified by designating myxedema as an actual hypothyroidism and chronic nephrosis as a relative hypothyroidism.

The primary object, then, of the present communication is to call attention to the enormous tolerance of patients with nephrosis for thyroid substance and thyroxin. We learn from reliable sources that the amount of thyroid necessary to reestablish normal metabolic conditions in myxedematous patients is relatively small, but I have found that in chronic nephrosis the amount of thyroid or thyroxin necessary to produce a therapeutic effect is most extraordinary. For example, daily doses of from 1 to 4 Gm. (15 to 60 grains) of thyroid are often required over long periods of time to elicit a metabolic response.

While superficially the difference in the behavior of myxedema and chronic nephrosis in relation to thyroid is quantitative only, the metabolic disturbance in chronic nephrosis must be of a somewhat different nature and much more profound in character. When measured in terms of thyroid requirement, the disturbance is even greater than that represented by the total cessation of thyroid secretion. Another indication of the fundamental difference is found in the basal metabolism. In all myxedematous patients the basal metabolism tends to approach a uniform level, which is about 40 per cent below normal.[7] In chronic nephrosis, the depression is not uniform and rarely attains such depths. In 60 per cent of the cases the basal metabolism is subnormal, the usual findings ranging from minus 10 to minus 22. In the other 40 per cent, the figures are either normal or slightly above normal. In only one case was the basal metabolism found to be as low as minus 39, and that was during the height of the edema.

Kendall[7] has shown that the efficacy and reactivity of thyroxin administered intravenously depends on the speed with which the tissues absorb it from the blood stream and on the duration of its presence in the tissues. Thus, while one large dose (given intravenously) produces no ill effects, the same amount administered in small daily doses produces all the symptoms of hyperthyroidism and death. It appears, moreover, from his experiments that after a single large dose (given intravenously), 43 per cent of the thyroxin[8] is excreted in the bile and 13 per cent in the urine within the first fifty hours after the administration.

The fate of the thyroid and thyroxin in chronic nephrosis has not been determined by me; whether the unusual tolerance exhibited by these patients is due to increased excretion, inactivation, or lack of absorption by the tissues is still problematic.

PURPOSE OF TREATMENT

Thus, on the basis of what I have just stated, both here and elsewhere,[9] the problem in the treatment of chronic nephrosis is threefold, namely:

1. To replace the protein loss of the blood plasma which results from the albuminuria and which plays so large a part in the retention of water and the forma-

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[6] Epstein, A. A., and Lande, Herman: Studies on Blood Lipoids, Arch. Int. Med. **30**: 563 (Nov.) 1922.

[7] Kendall, E. C.: Endocrinology **3**: 156, 1919.

[8] Computed from iodine excretion following administration of thyroxin.

[9] Epstein, A. A.: M. Clin. N. Amer. **4**: 145 (July) 1920 and the references given in footnotes 1 and 3.

tion of edema.[10] This is best accomplished by feeding a high protein diet; that is, 2 and 3 grams of protein per kilogram of body weight.

2. To compel the tissues to utilize protein and incidentally to reduce the lipoidemia. This, too, is often accomplished by a liberal protein, but fat-poor diet. The administration of thyroid aids in attaining this desideratum.

3. To reestablish normal metabolism. When high protein feeding fails to accomplish this, the institution of thyroid is definitely indicated. It must be remembered, however, that the main purpose in the use of thyroid is to stimulate protein utilization. It does not aim to replace protein feeding, which is a fundamental in the treatment of chronic nephrosis.

The symptomatology of chronic nephrosis is so closely interwoven with its biochemistry that whatever modifies its chemism in the right direction relieves its symptoms, and improves the condition. Thus, by virtue of a common attribute—stimulation of protein metabolism—beneficial results follow high protein feeding, thyroid administration and occasionally fever. It must be remembered, however, that relief of symptoms and improvement alone should not be the sole objects of the treatment of chronic nephrosis. Experience convinces me that uncomplicated cases, and occasionally others are susceptible of complete cure by the intelligent and persistent use of the high protein diet and thyroid therapy. The necessary dietary means to which I have referred have been amply discussed on other occasions.[11] I will therefore attempt only to outline the use of thyroid.

METHOD OF TREATMENT

When the preliminary high protein feeding fails to give any therapeutic result, such as elimination of the edema, control of the albuminuria, and change in the chemical reaction of the blood, the use of thyroid is begun. The initial dose is usually small, from ½ to 1 grain (0.03 to 0.065 Gm.) three times a day. In many instances this dose may be sufficient to enhance the effect of the high protein diet in attaining its therapeutic success. As a rule, however, much larger doses are needed. The amount of thyroid is therefore rapidly increased until a daily dose of 15 grains (1 Gm.) is reached. If such a dose fails to give any indication of effectiveness, it is immediately doubled and administered for from five to seven days. If this in turn does not give therapeutic results, the use of thyroxin is resorted to. It is given intravenously, the initial dose being from 5 to 10 mg. This dose may be repeated at intervals of from five to ten days until definite effects are observed. The beneficial effect is indicated by increased diuresis, diminution in the albumin output and decrease in the lipoidemia. While increase in pulse rate and elevation of temperature occasionally follow the use of thyroxin, no toxic symptoms develop as long as the lipoidemia persists.

The effect of thyroxin on the lipoid content of the blood is well illustrated by a case of idiopathic xanthomatosis, not associated with any other known metabolic disease, in which a hypercholesterolemia was present. Following the administration of 3 mg. of thyroxin, the cholesterol in the blood dropped from 484 to 320 mg. per hundred cubic centimeters, a similar dose given seven days later caused a further drop to 285 mg., and then again to 190 mg. per hundred cubic centimeters. On withholding the further administration of thyroxin,

Table 1.—*Results of Treatment in Case 1*

Date	Diet	Medication	Cholesterol Mg. per 100 Cc.	Basal Metabolism	Weight, Pounds	Pulse Rate	Blood Pressure	
							Systolic	Diastolic
8/21-9/3/25	Protein....... 140 Gm. Carbohydrate 200 Gm. Fat........... 50 Gm.	....	334	—15	153	72-112	110	76
9/3 9/5/25	....	Thyroid, 3 grains daily	...	—11	...	......	...	..
9/ 6/25	....	Thyroxin, 3 mg.	334	....	...	......	...	..
9/ 9/25	....	Thyroid, 9 grains daily	...	Normal	141	70-100	...	..
9/11/25	....	Thyroid, 15 grains daily						
9/13/25	....	Thyroid, 21 grains daily	336	—15	143	......	...	..
9/18/25	....	Thyroid, 30 grains daily	...	— 6	142	68-108	...	..
9/21/25	....	Thyroid, 36 grains daily	358	....	143	70-100	...	..
9/26/25	Protein....... 220 Gm. Carbohydrate 250 Gm. Fat........... 50 Gm.	Thyroid, 15 grains daily						
9/28/25	....	Thyroid, 30 grains daily						
10/ 1/25	....	....	240	+15	...	......	...	..
10/ 4/25	....	Thyroid stopped						
10/ 7/25	....	Thyroid, 15 grains daily	464	—11	...	......	...	..
10/10/25	Protein....... 250 Gm. Carbohydrate 200 Gm. Fat........... 40 Gm.							
10/15/25	....	Thyroid, 7½ grains daily						
10/18/25	....	Thyroid stopped						
10/21/25	....	Thyroid, 15 grains daily	...	— 9	143	76-100	110	60
10/29/25	Patient left hospital..	Thyroid received = 1,018 grains, average = 20 grains daily						
11/11/25	Readmitted to hospital Protein....... 250 Gm. Carbohydrate 200 Gm. Fat........... 40 Gm.	Thyroid, 30 grains daily	520	+ 3	155	76-112	116	60
11/13/25	....	....	...	+ 9	139	......	...	..
12/ 1/25	....	Thyroid, 10 grains daily						
12/ 5/25	....	....	...	+ 5	...	112	...	..
12/ 7/25	....	Thyroid, 9 grains daily	...	+ 5	...	......	...	..
12/18/25	....	....	266	....	...	......	...	..
12/21/25	....	....	...	+10	...	......	...	..
1/ 4/26	....	....	...	....	137.	......	...	..
1/12/26	Patient left hospital..	Thyroid received = 1,035 grains, average = 14.8 grains daily						
1/29/26	Protein....... 250 Gm. Carbohydrate 200 Gm. Fat........... 40 Gm.	Has not been taking thyroid for 10 days	560	+ 7	149 no edema	......	...	..
4/ 1/26	Patient working.......	....	416	+ 1	149½	......	...	..
4/ 2/26	....	Thyroid, 6 grains daily	...	....	...	96	...	..

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[10] Epstein, A. A.: Am. J. M. Sc. **154**: 638 (Nov.) 1917.

[11] Epstein (footnote 1, first reference; footnote 3; footnote 9, first reference; footnote 10).

the cholesterol content of the blood rose two weeks later to 340 mg.

The oral administration of thyroid in large doses occasionally causes gastric distress, such as anorexia and nausea, and in such cases the use of thyroxin is resorted to at once along the lines outlined above. As soon, however, as therapeutic results are evidenced, the dose of thyroid and thyroxin is reduced, the main guide being the lipoidemia. It is a very comforting fact that thyrotoxic symptoms have not been observed by me thus far, in spite of the enormous doses of thyroid and thyroxin used, a fact which would seem to indicate that there are not likely to be any untoward symptoms prior to a favorable turn in the clinical course of the disease.

Space will not permit a detailed account of all the cases treated with thyroid and thyroxin. I have selected three cases, which are still under treatment, and which illustrate the great tolerance these patients have for thyroid and thyroxin, together with some of the effects that have been produced.

Case 1.—G. H., a man, aged 22, native American, a receiving clerk, admitted to the hospital, Aug. 21, 1925, complained chiefly of swelling of the lower extremities, which developed seven weeks before admission, and puffiness of the eyelids. The edema was at first transient, later permanent and progressive. The physical examination was negative except for a soft, pitting edema of the lower extremities. The blood Wassermann reaction was negative. The urine contained albumin, + +; specific gravity was 1.020; there were no formed elements. Chemical examination of the blood revealed: total serum protein, 4.25 per cent; total globulin, 3.20 per cent; albumin, 1.09 per cent. Cholesterol was 0.334 per cent. Nitrogen waste products were normal. The basal metabolism was minus 15. The diagnosis was chronic nephrosis.

With the exception of one small dose of thyroxin (3 mg.), the treatment in this case consisted entirely of thyroid and a high protein diet. As indicated, very large doses of thyroid[12] were required to effect a reduction in the cholesterol and a rise in the basal metabolism. Interruption of its use, as seen in table 2, on two separate occasions caused a return of the hypercholesterolemia, together with a fall in the basal metabolism. After a period of treatment for four months in the hospital, his edema had subsided and the albumin had cleared up entirely. Recently, however, there has been a recurrence of the albuminuria and he has been advised to return to the high protein diet and to take 6 grains (0.4 Gm.) of thyroid daily. The high protein diet must be continued until the albuminuria disappears, and thyroid must be used as long as the cholesterol content of the blood remains high.

Case 2.—A. G., a man, aged 44, an insurance agent, entered the hospital, Sept. 13, 1924, complaining of generalized edema, which had developed eight months before. The rest of the history is irrelevant. Physical examination revealed the presence of an ascites, rightsided hydrothorax, and edema of the lower extremities and back. There were no circulatory disturbances. The blood Wassermann reaction was negative. The urine contained albumin, + + + +; the specific gravity was from 1.010 to 1.028; a few casts and leukocytes were present. The phenolsulphonphthalein test yielded 59 per cent in three hours. Chemical examination of the blood revealed: total serum protein, 3.7 per cent; total globulin, 2.28 per cent; albumin, 1.4 per cent. Cholesterol was 0.672 per cent. Nitrogen waste products were normal. The basal metabolism was minus 36. The diagnosis was chronic nephrosis.

Table 2.—*Results of Treatment in Case 2*

Date	Diet	Medication	Cholesterol *Mg. per 100 Cc.*	Basal *Metabolism*	Weight, *Pounds*	Pulse *Rate*	Blood Pressure	
							Systolic	*Diastolic*
9/16- 9/24/24	Protein....... 150 Gm. Carbohydrate 120 Gm. Fat........... 20 Gm.	....	672	—36	167½	60–108	116	66
9/24–10/18/24	....	Thyroid average 15 grains daily; total, 492 gains	636					
10/18–10/20/24	....	Thyroxin, 5 mg.	528	—22	171	60- 92	...	..
10/20–10/23/24	....	Thyroxin, 5 mg.	...	....	166	84–100	...	..
10/23/24	....	Thyroxin, 10 mg.	...	—13	...	92	...	..
10/24–11/18/24	....	....	530	....	165	128	...	..
11/19/24	....	Thyroxin, 5 mg.	528	—12	160	80–120	...	..
11/24/24	Ambulatory..................	Thyroxin, 5 mg.	...	....	163	80	...	..
12/ 5/24	....	Thyroxin, 5 mg.	552	—24	...	......	...	..
12/13/24	....	Thyroxin, 4 mg.	.					
12/20/25	....	Thyroxin, 5 mg.	...	—20	...	..	...	..
1/ 3/25	....	....	500	—13	149⅜	80	...	..
1/16/25	....	Thyroid, 3 grains daily	...	— 7	148	80	...	..
1/31/25	....	Thyroid, 3 grains daily	...	— 6	145	..	...	..
2/14/25	....	Thyroid stopped........	...	+ 6	142¾	..	...	..
3/14/25	....	Thyroid stopped........	...	+ 4	144	..	...	..
6/20/25	Mixed diet............	Thyroid, 6 grains daily	340	—10	134⅞	..	128	74
7/11/25	....	Thyroid stopped........	...	+ 7	132½	..	...	..
10/ 5/25	....	Thyroid, 6 grains daily	336	—10	130½	..	...	..
10/5–12/30/25	....	Thyroid, 6 grains daily						
1/11/26	....	Thyroid stopped of his own accord for 2 weeks						
4/14/26	Mixed diet; patient works 8-10 hours daily............		312	+ 9	134½	..	128	70

The salient points illustrated by this case are the reduction in the cholesterol content of the blood to normal, the elevation of the basal metabolism, and the subsidence of the edema. Traces of albumin still persist.

Case 3.—M. R., a man, aged 30, a drug clerk, entered the hospital, Aug. 18, 1925, complaining chiefly of an edema of two years' standing. The patient had been under treatment in two different institutions without result. The blood Wassermann reaction was negative. The urine contained albumin, + + + +; microscopic examination was in general negative, occasionally a few casts being seen. The specific gravity ranged from 1.014 to 1.040. Chemical examination of the blood revealed: cholesterol, 0.334 per cent; nitrogen waste products, normal. The basal metabolism was normal. The diagnosis was chronic nephrosis.

In this case both thyroid and thyroxin were used. Notwithstanding the extraordinary dosage, this case has been most refractory because of the patient's inability to take any nourishment. Various measures were used to induce diuresis; urea was used, but failed until it was used in combination with thyroid. His edema has subsided entirely; the albuminuria is very much reduced, and his general condition is excellent.

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[12] Burroughs and Wellcome's tablets of desiccated thyroid gland were used throughout these studies.

For a period of five months he received an average of 23 grains (1.5 Gm.) of thyroid daily, and in addition he received 137 mg. of thyroxin, in divided doses, over a period of about eleven weeks.

The high protein diet, and thyroid therapy in more moderate doses, are continued until a cure can be attained. This may require a year or longer for its accomplishment. It must be borne in mind, as already repeatedly stated, that while the basal metabolism serves in a measure as an index, the chief guide is the cholesterol content of the blood. When this reaches a normal or subnormal level, thyroid should be discontinued and resumed only when the cholesterol shows a definite tendency to rise. The use of thyroid is contraindicated during a febrile attack.

Table 3.—*Results of Treatment in Case 3*

Date	Diet	Medication	Cholesterol Mg. per 100 Cc.	Basal Metabolism	Weight, Pounds	Pulse Rate	Blood Pressure Systolic	Blood Pressure Diastolic
8/20/25	Protein....... 100 Gm. Carbohydrate 250 Gm. Fat........... 50 Gm.	....	300	Normal Temp. 100 F.	136	......	110	75
8/24/25	Patient does not eat well	Thyorid, 6 grains daily						
8/26/25	....	Thyroid, 9 grains daily						
8/27/25	....	Thyroid, 15 grains daily	424	—11	...	......	...	..
8/28-9/24/25	....	Thyroid, 21 grains daily	221	....	138-150	......	...	..
9/11/25	....	....	434	....	...	......	...	..
9/25-10/11/25	....	Thyroid, 30 grains daily	580	....	140	88-112	...	..
10/ 9/25	....	....	354	Normal	142	76-114	...	..
10/12/25	Patient does not eat well	Thyroid stopped Thyroid received = 1,160 grains in 49 days; average = 24 grains daily						
10/ 6/25	....	Thyroxin, 7 mg.						
10/14/25	....	Thyroxin, 10 mg.	...	....	...	76-132	...	..
10/23/25	....	Thyroxin, 10 mg.	...	....	150	......	...	..
10/30/25	....	....	...	— 9	...	......	...	..
11/ 1/25	....	....	...	....	143	......	...	..
11/ 5/25	....	Thyroxin, 10 mg.	...	....	...	89-112	...	..
11/ 9/25	....	....	...	+20	...	......	...	..
11/12/25	....	....	251	....	...	......	...	..
11/16/25	....	....	...	—15	...	......	...	..
11/18/25	....	Thyroxin, 10 mg.	...	....	...	96-112	...	..
11/20/25	....	....	...	—19	...	80-100	...	..
11/23/25	....	Thyroxin, 10 mg.						
11/25/25	....	....	...	— 9	...	......	...	..
11/27/25	....	Thyroxin, 10 mg.	...	....	...	80-96	...	..
12/ 2/25	....	Thyroxin, 10 mg.	...	....	...	72-82	...	..
12/ 4/25	....	....	...	— 2	152	......	...	..
12/ 7/25	....	Thyroxin, 10 mg.						
12/ 8/25	....	....	178	Normal	...	......	...	..
12/12/25	....	Thyroxin, 10 mg.	...	....	137	......	...	..
12/14/25	....	....	...	—12	...	......	...	..
12/16/25	....	Thyroxin, 20 mg.						
12/18/25	....	....	...	+ 4	142	......	...	..
12/22/25	Protein....... 150 Gm. Carbohydrate 250 Gm. Fat........... 50 Gm.	Thyroxin, 20 mg.	...	....	...	89-136	...	..
12/25/25	Patient not eating well	Thyroxin received = 137 mg.	...	+12	...	......	...	..
12/29/25-1/2/26	....	Thyroid, 45 grains daily						
1/ 2/26	....	Thyroid stopped........	...	....	139	......	...	..
1/9/25-3/7/26	....	Thyroid, 30 grains daily						
1/14/26	....	....	...	—17	...	......	...	..
1/20/26	....	....	200	....	...	......	...	..
1/25/26	....	....	...	— 8	...	......	...	..
2/13/26	....	....	254	....	109	......	...	..
3/ 8/26	....	....	...	—11	...	......	...	..
3/8-3/24/26	....	Thyroid, 10 grains daily						
3/15/26	....	....	324	....	91	......	...	..
3/24/26	....	Thyroid stopped Thyroid received = 2,070 grains in 99 days; average = 21.9 grains daily						
4/14/26	....	....	260	—13	109	......	...	..

In complicated cases of chronic nephrosis, that is, cases associated with true renal disease, the problem in the treatment is the same in principle but different in detail. If azotemia is present the dosage of thyroid is smaller, and the amount of protein used in the diet is reduced to the basal requirement (figured on the normal for the individual), plus an amount equal to that lost in the urine.

AZOTEMIA

A few words in reference to azotemia in these cases may be in place here. It is frequently said that in chronic nephrosis nitrogen retention does not occur. This refers to the nonprotein nitrogen in the blood and is used as a distinguishing clinical feature between chronic nephrosis and true renal disease. This statement is misleading because retention of nitrogen does take place in chronic nephrosis although it is not manifest in the examination of the blood. The content of the waste products in the blood in nephrosis depends on two factors: the concentrating power of the kidneys and the water retention of the tissues. In uncomplicated cases of nephrosis, retention of nitrogen waste products occurs just as it does in complicated cases, but the concentration of these waste products in the blood is not increased because of their diffusion into the waterlogged tissues. This is borne out by the fact that when the edema subsides, there results a temporary azotemia or increased nitrogen content of the blood. This results from a difference in the rate of excretion of water and solids by the kidneys. First comes the water, then the salts, and finally the nitrogen waste products, which lag somewhat behind. In the complicated cases, because of the deficient concentrating power of the kidneys, there is a persistent lag in the excretion of nitrogen waste products, so that the retention of these substances exceeds the retention of water by the tissues, and, failing proper dilution, these substances become concentrated in the blood and tissue fluids.

When and if the azotemia subsides, practically the same rules for treatment are observed as in the other cases, with the exception of the use of protein in the diet, which is limited as long as the kidneys indicate functional disturbance in relation to concentration of the urine and ability to excrete nitrogen waste products.

NEPHROSIS WITH SYPHILIS

There is one other group of cases to which I wish to call special attention, and in which two distinct sets of therapeutic indications exist. The ultimate outcome of these cases depends on the order in which the indications are met. I refer here to the cases of nephrosis to which a history of syphilis or in which a positive Wassermann reaction is obtained. It will be recalled that Munk in discussing lipoid nephrosis ascribed the etiology of many of his cases to syphilis. I have encountered only three cases of nephrosis with *syphilitic history and a positive Wassermann reaction.* My experience with them indicates that the nephrosis is an independent condition and has nothing to do with the syphilis. Attempts to treat the syphilis resulted in marked aggravation of the nephrosis. In two of these cases, therefore, attention was first given to the nephrosis. The usual therapeutic procedures were used, namely, high protein feeding and thyroid, and the patients made a complete recovery from the nephrosis. In the third case, which was complicated with general paralysis, the treatment for the nephrosis could not be complete.

It is therefore important to remember that the coexistence of syphilis or a positive Wassermann reaction with a chronic nephrosis does not signify that the latter is necessarily a result of syphilis.

SUMMARY

1. The term chronic nephrosis is used to designate a group of cases in which a profound metabolic disturbance exists. To this disturbance the name "diabetes albuminuricus" has been applied.

2. The pathologic changes in the kidneys (tubular degeneration) are the consequence and not the cause of the metabolic disturbance.

3. The therapeutic requirements in chronic nephrosis are met in some cases by high protein feeding alone, and in others in conjunction with thyroid or thyroxin.

4. Cases of chronic nephrosis exhibit an unusual tolerance for thyroid and thyroxin.

5. The response to thyroid therapy is best measured by the cholesterol content of the blood. Thyrotoxic symptoms do not occur as long as a hypercholesterolemia exists.

6. Certain cases of chronic nephrosis are susceptible of complete cure by the intelligent and persistent use of high protein feeding and thyroid therapy. This may require a year or longer to accomplish.

70 East Eighty-Third Street.

ABSTRACT OF DISCUSSION

Dr. Norman M. Keith, Rochester, Minn.: This question of nephrosis is very important and difficult. I think it has been the experience of almost all the workers in this field that they have found there are certain cases very much and almost exactly like the cases that Dr. Epstein first described in 1917, while others do not present the metabolic disturbance that he then described. I think we can say that certain cases do respond to the treatment of high protein therapy. Dr. Berglund of the University of Minnesota has had some interesting experiences in the last year in regard to the albuminuria in cases of nephrosis. He has found that when he gives these patients a large protein intake, such Dr. Epstein has described, the albuminuria was marked increased temporarily, and at the same time there was increase in the plasma proteins up to 30 per cent. In o experience we have not seen many of these cases with th metabolic disturbance that Dr. Epstein has outlined. O such patient first came to us two years ago. She did ha these findings in the blood, and presented, I think, a tr nephrosis of the Epstein type. Instead of following t regimen, we have treated her with diuretics such as calciu chloride, ammonium chloride, and the combined dose ammonium chloride and the organic mercury preparati merbaphen (novasurol) and now we have been able to ke her edema free for practically one year. The urine st shows albumin and casts, and we do not feel that she cured; but the blood cholesterol, blood fats, and total seru proteins are normal. She is better and able to work, som thing she had not been able to do for a *period of a y* previous to her admission. I feel that there may be place for this treatment, and, as Dr. Epstein has pointed o it may take a year or more to bring about a cure; but I feel that there are many cases of nephrosis in which th treatment is not efficacious or is difficult to apply, and that must seek other methods, and that other methods, such the use of certain diuretics, may give us similar or ev better results.

Dr. Albert A. Epstein, New York: I am sorry that cannot present patients here because I could have brought least a dozen that are absolutely well and have no trace albumin. In fact, insurance companies are willing to ta them on normal premiums. This disease is curable. T albumin is just an incident and will continue as long as t underlying perversion of metabolism persists, and the on way we can remedy that perversion is by compelling t utilization of proteins within the body. As I stated in n paper, protein accomplishes this by its specific dynamic acti Sometimes we see a very remarkable improvement after febrile attack. We have one such case in the hospital no a man presenting a typical nephrosis, who developed loba pneumonia and is promptly beginning to improve after the subsidence of the fever. I explain that on the basis that the effect of the febrile attack on metabolism is much the same as the use of high protein feeding and thyroid therapy. I do not see how we can possibly confuse this condition with any other renal disease. Primarily, a renal disease does not produce any such disturbance as we find in chronic nephrosis. I was gratified to see in the exhibit of Dr. Hartman's work on the direct effect of the roentgen ray on the kidneys, and from what he tells me, that the clinical picture of the animals is different from anything like what we find in chronic nephrosis. As far as the use of diuretics is concerned, the edema is only an incident; it does not worry us, but it worries the patient. There are many ways of getting rid of the edema. I believe that the low protein content of the blood serum is largely responsible for the persistent edema, and on comparing a great many cases, I find that when the protein content of the blood serum is above 5 Gm. per hundred cubic centimeters the edema is not constant. These patients will have edema, and when they go to bed it disappears. If the protein content of the blood serum is below 5 Gm. per hundred cubic centimeters, the edema is persistent whether *they are up and about or in bed.* It is a soft edema, and if one puts a needle under the skin one will get nothing but a clear, watery fluid. The use of diuretics is merely a means of getting rid of the edema. It does nothing toward the cure of the condition. It seems certain to me that nephrosis, when uncomplicated, is an absolutely curable disease. The best means available is the regimen that I have outlined, and it is essential to make the patient stick to it. This is not always an easy matter. The complicated cases are those associated with a hypertension and in which a true renal disease supervenes. In those cases it is not advisable to use very high protein feeding, and we limit the protein intake to the basal requirement, plus an amount of protein equal to that lost in the urine.

THE CONTROL OF SCARLET FEVER IN INSTITUTIONS

BY ACTIVE IMMUNIZATION WITH TOXIN DETOXIFIED WITH SODIUM RICINOLEATE

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Through the work of the Dicks it has been shown that an active immunity can be established in positive Dick reactors by the injection of scarlet fever streptococcus toxin.

The process of immunization has since been made mild, safe and rapid through proper neutralization of the raw toxin with sodium ricinoleate.[1] By means of this method it has been shown that 87 per cent of children under 8 years of age and as high as 77 per cent of older children susceptible to scarlet fever have been made Dick negative in eight days. The rapidity with which the immunity occurred was entirely owing to the large dosage (from 3,000 to 5,000 skin test doses) possible with the neutralized toxin.

An ideal immunizing process has a double aid: 1. To immunize fairly permanently. 2. To preclude the possibility of epidemics thereby.

The apparent immunity established at the end of eight days as indicated by repeated skin tests, while not fulfilling the second aim completely, does, however, suggest the value of the procedure in controlling an outbreak of scarlet fever, especially in institutions and schools where close contact in dormitories, class rooms and dining halls would lead almost unavoidably to an epidemic.

Therefore it was decided to try out the large doses of neutralized toxin on all susceptible students when in November, 1925, three cases of scarlet fever developed at the School for the Deaf in Faribault, Minn., with 272 children enrolled, whose ages range from 6 to 18 years. Every child was given the Dick test, November 27, which, when read, November 28, showed seventy-six children to be positive. The seventy-six were immediately injected with scarlet fever streptococcus toxin in a 2 per cent solution of sodium ricinoleate, so that the concentration of the toxin was 3,000 skin test doses per cubic centimeter. This was given intramuscularly in the deltoid.

One week later a second injection was given, with a concentration of 5,000 skin test doses per cubic centimeter, neutralized by a 2 per cent sodium ricinoleate solution. Local reactions were few and mild. Following the first injection there were only two general reactions, with slight fever and headache lasting about twenty-four hours. An adult employee with a four plus Dick test, while given only 1,500 units, developed slight malaise, a temperature of 99.5 and a generalized rash. Following the second injection of the toxin, no child reported at the doctor's office.

One case of scarlet fever developed in a patient with a positive Dick reaction five days after the first injection. The patient showed the typical tongue, slight sore throat and fever and a mild rash. No other case has since developed in the school.

Retests, Jan. 30, 1926, three months later, gave the following results: Of the thirty-six girls immunized, thirty-two were negative, or 88 per cent. Of the thirty-eight boys, twenty-three, or 60.5 per cent, were negative. The lower percentage of negatives in the boys was undoubtedly due to the fact that most of them were 15 years of age and over, which tends to confirm a previous observation in working with this method, that older children and young adults do not immunize as readily as younger children.

An interesting point was observed in comparing the Dick tests made with scarlet fever streptococcus toxin supplied by two different biologic houses. Whereas one toxin gave a definite positive, the other was equally positive in its reaction with only one exception.

Retests, April 25, six months later, on seventy-one of the original series (five children did not return to school the second semester) gave startling results. Only three out of seventy-one boys and girls gave mildly positive reactions, or 95.7 per cent were negative.

In view of the fact that mild cases of scarlet fever have been observed in cases known to be Dick negative, retests were made with a ten-strength toxin, which showed only six mildly positive reactions, or a remaining 91.5 per cent negative.

That infection of the throat with the scarlatinal streptococcus may occur in persons immune to scarlet fever is certain. This was clearly shown at the Jean Martin Brown Home for Children, where three cases of scarlet fever developed in rapid succession in January of this year. Without a Dick test being done, all forty-two children enrolled were given 3,000 skin test doses intramuscularly, followed in one week with 5,000 skin test doses. Three weeks after the second injection a boy, aged 12 years, developed fever, general malaise, sore throat and a typical scarlet tongue. There was no rash. Recovery was rapid. No further cases have developed in those immunized. A nurse maid who entered the school for training at that time developed scarlet fever the eighth day after entering the institution.

In a large state institution of 1,500 persons, where all susceptible persons, as determined by the Dick test, were immunized by this method in August, 1925, Dr. David E. McBroom, medical director, reports no cases of scarlet fever in the institution for the first time in his experience.

CONCLUSIONS

1. Positive Dick reactors can be immunized against scarlet fever streptococcus toxin.

2. Children under 8 years of age may be safely given 3,000 skin test doses with this method.

3. In young children immunity is effected within as short a period as eight days, which makes possible the suppression of an epidemic by active immunization.

4. In older children, while immunity is established more slowly, repeated Dick tests at three months and six months indicate a marked progressive immunization.

5. On observing the possibility of mild scarlet fever developing in negative Dick reactors, it becomes evident that the strength of the test material should be increased.

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[1] Larson, W. P., and Colby, Woodard: Proc. Soc. Exper. Biol. & Med. 22: 540-550, 1925. Larson, W. P.; Huenekens, E. J., and Colby, Woodard: Immunization Against Scarlet Fever, J. A. M. A. 86: 1000-1001 (April 3) 1926.

GROUP SUSCEPTIBILITY TO ACUTE, UPPER RESPIRATORY TRACT INFECTIONS

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A rather comprehensive review of the literature on the so-called common cold and upper respiratory tract infections of the influenzal type made by Townsend[1] of the United States Public Health Service indicates that "there has been little advance in any knowledge concerning its etiology, epidemiology, periodicity, or the establishment of definite symptoms, pathognomonic in its diagnosis." It therefore would seem that any study of possible factors governing the susceptibility to "colds" is worth reporting, since even negative conclusions help at least to narrow the field of investigation.

Smiley[2] of Cornell University in connection with a study of the incidence of "colds" among Cornell students, divided these men and women into three groups: (1) those having "colds" not at all or once a year; (2) those reporting two or three "colds" a year, and (3) those having four or more a year. A questionnaire was sent to groups 1 and 3 as representing students with relatively low and relatively high susceptibility to "colds." This questionnaire covered the factors of smoking, exercise, cold baths, hours of sleep, draft over the beds, kind of underwear worn, kind of footwear worn in wet weather, perspiration after exertion, constipation, exposure to dust or gas, mouth breathing, nose and throat operations, and family history in regard to "colds." The general conclusion drawn was that no real major factor was dealt with in the whole questionnaire. The differences in percentage between the two groups, so far as any of these factors were concerned, were too small to indicate that they affected more than slightly the susceptibility to "colds." The highest difference in percentage was 19, subjects in group 3 being that much more addicted to the use of woolen underwear (possibly used in an effort to avoid "colds" to which they were susceptible), and the only other factors giving a difference of over 10 per cent were history of nose and throat operations, history of parents having been subject to colds, and the habit of taking regular, violent exercise, all of which occurred more frequently in group 3 than in group 1.

This report suggested to me an investigation of the same sort concerning other possible factors. This study was based on the theory that the individual is made susceptible to upper respiratory tract infections by vascular changes in the mucous membranes of the nose and throat secondary to vasomotor disturbances of the whole body or to the effect of sudden changes in temperature and humidity of the air. I therefore sought information in regard to the methods of heating and the character of ventilation of the rooms in which the students spent a large part of their time. A questionnaire was mailed to all members of the student body who lived on or near the campus. About 2,500 cards were sent out, and 1,431 replies were received and tabulated, after those replies which were obviously carelessly or incorrectly made out had been discarded. Although the questionnaire form of investigation is not exact, such a method used with student bodies gives fairly conclusive results, if we allow something for the personal factor and use a large enough group for our studies. These men and women are of nearly the same age. They live and work and play under relatively the same conditions, and they are intelligent enough to give relatively correct answers. As was the case in similar investigations, under the general title of "colds" were included all attacks of rhinitis, pharyngitis, bronchitis, influenza or tonsillitis. As shown in tables 1 and 2, students are grouped according to the number of "colds" each year. For the sake of comparing figures it may be assumed that those having no "colds" or only one or two a year represent a healthy group as far as this type of infection is concerned, that those reporting three or four are moderately susceptible, and that those reporting five or more are highly susceptible.

TABLE 1.—*Percentage of Students Reporting Specified Number of "Colds"*

	Number of Colds Annually			
	None	1 to 2	3 to 4	5+
Stanford, men	7	41	31	21
Harvard, men	0.6	45	40	14
Stanford, women	9	60	23	9
Wellesley, women	7	50	36	6

TABLE 2.—*Percentage of Students Reporting Specified Number of "Colds" a Year at Stanford and Cornell*

	Number of Colds Annually		
	0 to 1	1 to 2	4+
Stanford, men	25	42	33
Cornell, men	15	58	26
Stanford, women	40	47	13
Cornell, women	19	61	20
Stanford, men and women	29	43	28
Cornell, men and women	17	60	23

The incidence of "colds" at Stanford is about the same as at Cornell and Wellesley,[1] and as reported by Townsend[3] in his survey of 679 students at Harvard. As pointed out by Townsend, the relative frequency of upper respiratory tract infections does not vary much from one part of the country to another. Although tables 1 and 2 show a slight percentage margin in favor of this locality, the difference is so slight that it cannot fairly be attributed to the difference in climatic conditions, which is so great. There are as great differences between the men and the women here at Stanford in their susceptibility to "colds" as there are between students from universities in different parts of the country. As at Cornell, the morbidity is lower among the women than among the men. Definite morbidity statistics available from our investigation at Stanford as compared with those at Harvard show that the average number of attacks annually per student is: Stanford men, 2.84; Stanford women, 2.09; Harvard men, 2.88.

Students were asked to report on the method by which their rooms were heated, it being presumed that they were exposed to atmosphere thus dried and heated for at least several hours a day. Nearly 60 per cent of the rooms were steam heated. Table 3 gives the percentage of men and women having a specified number of "colds" a year grouped according to the way in which their rooms were heated. It will be noted that there is no variation of more than 11 per cent in the susceptibility grouping.

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[1] Townsend, J. G.: A Review of the Literature on Influenza and the Common Cold, Supp. 48, Pub. Health Rep., Washington, 1924.

[2] Smiley, D. F.: Acute Infections of the Throat and Respiratory System, J. A. M. A. 82:540 (Feb. 16) 1924.

[3] Townsend, J. G.: Epidemiological Study of the Minor Respiratory Diseases by the Public Health Service, Pub. Health Rep. 39:2669 (Oct. 24) 1924.

The problem was approached from another angle, one which according to prevailing notions should have shown something. Students reported as to whether they slept on sleeping porches or in well ventilated rooms or in poorly ventilated rooms. Table 4 shows the distribution of "colds" with the students thus grouped. There is practically no difference in the susceptibility ratings of these groups, there being no percentage difference greater than 12. As a matter of fact, students using sleeping porches report slightly more "colds" than those using well ventilated rooms for sleeping purposes. Apparently the bleak wind swept sleeping porch is no more effective as a prophylactic against upper respiratory tract infections than is the morning cold shower or the wearing of galoshes in wet weather.

Table 3.—*Methods of Heating and the Percentage of Men and Women Having Specified Number of "Colds" a Year*

	Number of Colds				
	None	1 to 2	3 to 4	5—	Students
Steam heat	7	42	32	19	100%, 855
Hot air	7	53	28	12	100%, 151
Electricity	3	51	21	25	100%, 125
Gas heaters	4	45	28	23	100%, 54
Oil stoves	4	52	31	13	100%, 24
Wood or coal stove	11	53	22	14	100%, 124
Not heated	12	47	21	20	100%, 89

Table 4.—*Sleeping Quarters and Percentage of Men and Women Having Specified Number of "Colds" a Year*

	Number of Colds				
	None	1 to 2	3 to 4	5+	Students
Sleeping porch	5	39	38	18	100%, 248
Well ventilated bedroom	8	45	30	17	100%, 959
Poorly ventilated bedroom	7	37	34	22	100%, 127

Students using rooms heated by coal or wood stoves had a slightly lower morbidity than those reporting other methods of heating, and, as stated before, those sleeping in well ventilated bedrooms had a slightly lower morbidity than those using sleeping porches or poorly ventilated rooms. In table 5 is shown the incidence of "colds" among students having the best combinations of room and sleeping quarters as compared with those having the poorest. Although the percentage differences are noticeable, they do not indicate that such factors have more than a very slight influence on the susceptibility of the individual.

Table 5.—*Percentage of Students Reporting Specified Number of "Colds" as Related to Combinations of Methods of Heating and Sleeping Quarters*

	Number of Colds			
	None	1 to 2	3 to 4	5—
Stove heat; well ventilated bedroom	11	52	22	15
Steam heat; poorly ventilated bedroom	6	48	25	21

Only one man reported each of the two combinations of gas heat and poorly ventilated bedroom and electric heat and poorly ventilated bedroom, and both reported five or more "colds" a year.

Table 6.—*Comparison of Incidence of "Colds" Before and After Coming to College*

	Men	Women	Men and Women
Less "colds" at college	36%	38%	38.4%
No change	45%	50%	45%
More at college	19%	12%	17.6%

This question of the susceptibility of the individual was approached from yet another angle, which has nothing to do with the etiology of the infection but is interesting in a study of its occurrence. Students were asked to report whether they had more, less or the same number of "colds" at home before coming to college. As shown in table 6, men and women react to the change from home to college in about the same way, although there is again a slight margin in favor of the women. About 80 per cent of all the students report the same or a smaller number of "colds" at college as compared with the number before coming to college.

This question of the change in susceptibility to upper respiratory tract infection was also studied from the point of view of residence. We wished to find out whether persons from certain climatic areas reacted better to the change to California climate than did those from other areas. These percentages and the number of persons involved vary so greatly that it is impossible to draw any conclusions. Nevertheless, the results are presented in table 7.

Table 7.—*Percentages of Students from Different Sections of Country Reporting Lessened Number of Colds at College*

	Men		Women	
	Number of Persons in Group	Percentage Reporting Fewer Colds	Percentage Reporting Fewer Colds	Number of Persons in Group
California	804	37	31	272
Washington, Oregon	50	32	50	14
Idaho, Montana, Wyoming, Utah, Colorado	63	43	67	15
Arizona, New Mexico, Texas	20	5	83	7
Oklahoma, Nevada, North Dakota, South Dakota	18	28	50	6
Minnesota, Kansas, Iowa, Nebraska, Arkansas, Wisconsin, Indiana, Illinois, Ohio, Michigan	47	53	23	13
Missouri, Kentucky, Tennessee, Mississippi, Alabama, Louisiana, Georgia, Florida, North Carolina, South Carolina	9	33	100	4
Virginia, West Virginia, Pennsylvania, New Jersey, New York, Maryland, District of Columbia, Delaware	15	33	80	5
New England	17	29	100	1
Scattered	47	38	33	3

CONCLUSIONS

As a result of the tabulation of the reports as to the susceptibility to "colds" among 1,431 students at this California institution, the following observations may be made:

1. As pointed out by other investigators, the extremes of climatic conditions experienced in Massachusetts and New York State as compared with the more temperate climate of this vicinity are not major factors in the susceptibility to upper respiratory tract infections.

2. The incidence of "colds" is not markedly influenced by the various systems of heating used in the studies or living rooms of the students, although the percentage of those having a low susceptibility is slightly larger among the students using wood or coal stoves instead of steam or other methods of heating.

3. Whether the students use sleeping porches, well ventilated bedrooms, or poorly ventilated bedrooms for sleeping purposes does not materially affect the susceptibility grouping. Although the morbidity is slightly higher among those using poorly ventilated rooms, the difference is not great enough to warrant any definite conclusions.

4. Men and women react in about the same way to the change from home and other climatic conditions to college environment, 80 per cent reporting the same

number of attacks or less as compared with the number experienced at home.

5. The morbidity rate in upper respiratory tract infections is slightly lower for women in this group than for men. In fact, sex is apparently a greater factor in the susceptibility to this type of infection than is any other factor thus far considered.

THE ALKALINE TIDE IN ACHLORHYDRIA*

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AND
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It is well known that when duplicate gastric analyses are carried out the results of the two tests are often quite different. Not infrequently one test will show an absence of hydrochloric acid, while in another done at about the same time acid will be found. It has seemed worth while to try to develop some technic which would sort out the doubtful cases for further study, and so to avoid errors in diagnosis which may sometimes be of considerable importance. It seemed probable that an absence of the changes known as the "alkaline tide" in the urine might occur in cases of achlorhydria, and that urine studies might provide a method for the purpose.

The alkaline tide is a decreased acidity, or increased alkalinity, which is observed in the urine of most subjects during the day. The evidence seems to show that an increased alkalinity that develops during the daytime—disregarding differences in the reactions of the day and night urines—is most frequently caused by the secretion of acid by the stomach. Changes in reaction are also brought about by changes in the rate of respiration, by the ingestion of acid or base forming foods, and probably by the efficiency of the kidneys in excreting acid; but the marked, regular changes observed in normal subjects can almost certainly be attributed to the secretion of acid gastric juice, and its subsequent neutralization and reabsorption.

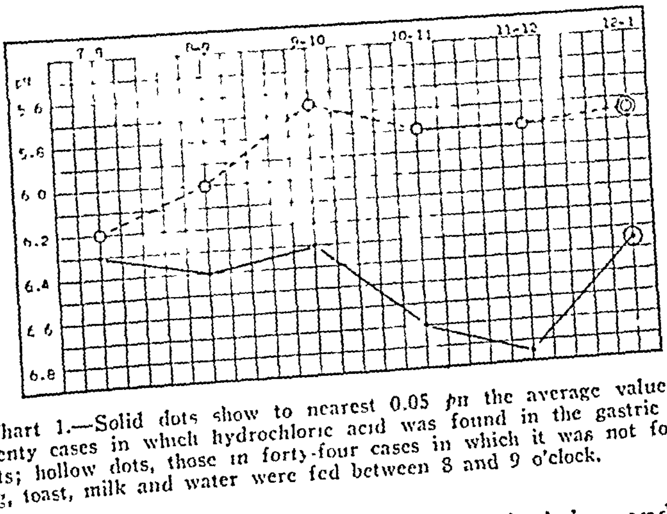

Chart 1.—Solid dots show to nearest 0.05 p_H the average values in seventy cases in which hydrochloric acid was found in the gastric contents; hollow dots, those in forty-four cases in which it was not found. Egg, toast, milk and water were fed between 8 and 9 o'clock.

In carrying out the studies of the alkaline tide, subjects were awakened at 7 o'clock and asked to void the urine secreted during the night. Specimens were then collected at hourly intervals until 12 or 1 o'clock. A breakfast consisting of two slices of toast, a glass of milk, a glass of water and an egg was fed at 8:30. No other food was allowed during the period, and acids and alkalis were forbidden. Subjects were asked not to drink water during the morning, but many of them ignored this part of the directions, without, as far as we could tell, any significant effect on the results. No instructions as to the activity of the patients were given, and most of them got up, dressed, and moved about during the study. Differences in activity did not seem to cause enough effect on urine reaction to vitiate results. The hourly specimens were sent to the laboratory and the reaction determined by a colorimetric method.

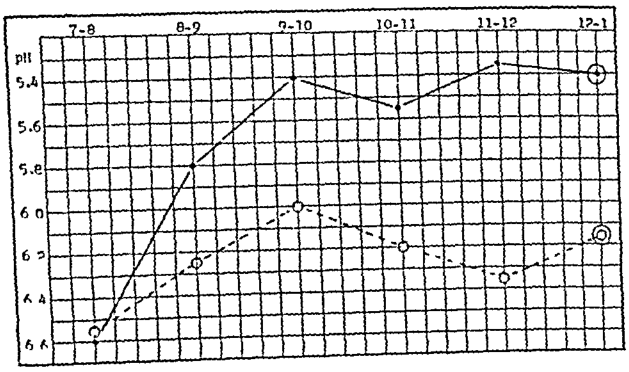

Chart 2.—Hollow dots show to nearest 0.05 p_H averages in seven cases with traces of hydrochloric acid in the gastric juice; hollow dots, those in fourteen cases in which the evidence of its absence from the gastric juice was not considered convincing. Egg, toast, milk and water were fed.

All of the results obtained on patients who had gastric analyses and alkaline tide studies done at about the same time are given in charts 1 and 2. For the most part only one test was done on each patient, but there were eighteen duplicate analyses made, in only one of which was the average significantly different from the first test. In these, averages have been used. Five tides were omitted because the test was incomplete. Chart 1 includes results in all cases in which an absence of hydrochloric acid was found in a fractional gastric analysis continued for at least an hour and a half. There were forty-five of these cases, and in thirteen of them no 1 o'clock specimen was obtained; the last point shown on the chart does not therefore bear a correct relationship to the other values. Results in seventy cases in which acid was present—all that were studied except seven in which acid was present in traces only—are also given. In seventeen cases the last specimen was not obtained. The results of these determinations are expressed in terms of p_H, a convenient method of expressing the hydrogen ion concentration, and increases in alkalinity are plotted toward the bottom of the chart. There is a distinct difference between the average values in the two groups of cases.

It has seemed desirable to suggest a description of changes which, in our opinion, show the presence of a tide. No entirely adequate definition can be given, for irregularities are sometimes encountered which are difficult of interpretation. It is not possible to use the reaction of the specimen collected before the meal is fed as the only base line, for this is frequently quite alkaline in reaction, probably as a result of changes in respiration attendant on awakening from sleep. The definition offered, which avoids this source of error and which lays emphasis only on changes in magnitude such as we feel can be regarded as significant, is as follows: If any specimen is more alkaline than one collected earlier in the test by 1.0 p_H or more, or if any two specimens are more alkaline than an earlier one by between 0.5 and 1.0 p_H, a tide is present. If the average reaction of all specimens collected is alkaline, i. e., is more than 7.0 p_H, the absence of changes in reaction should be disregarded, and the test considered unsatisfactory; analysis of an alkaline specimen is not easily made correctly, and there is some evidence in our series that when the urine is alkaline changes are not as marked as when it is acid. Of the forty-five cases of achlorhydria shown in chart 1, only nine showed changes of reaction as great as those described above, and in only two of the tests was the average reaction alkaline. In twenty of the seventy cases in which acid was present in the gastric juice, tides were not found; but in eight of these the average reaction of all specimens was alkaline. By the definition given, the agreement between the results predicted and found in both series was almost exactly 80 per cent correct.

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* Read before the Section on Gastro Enterology and Proctology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

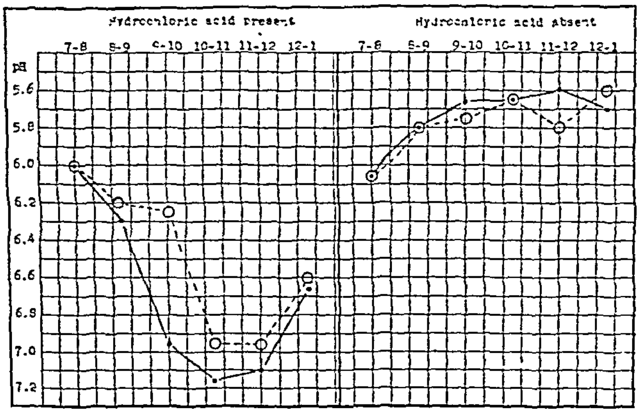

Chart 3.—Hollow dots show to nearest 0.05 p_H the average values after egg, toast, milk and water were fed between 8 and 9 o'clock; solid dots, after the same breakfast plus beefsteak were fed to the same subjects at the same time of day. Results in five cases with and seven cases without hydrochloric acid in the gastric juice are shown. The first value is the average of all results between 7 and 8 o'clock obtained in the cases.

While we feel that this agreement is sufficiently good to justify the use of the method as a check on gastric analysis, we also believe that adequate explanations of discrepancies encountered in about half the cases can be given from the results of the tests. In two of the cases in which tides were absent when there was hydrochloric acid in the gastric juice, gastro-enterostomies had been performed, and the stomach emptied rapidly through the openings. In these a very rapid reabsorption of acid products might well have overbalanced the effect of acid secretion. In two other cases the maximum acidities found in fractional tests were low—12 and 20 cc. of tenth normal acid per hundred cubic centimeters of gastric juice, respectively—and it is certain that the changes are dependent, not wholly on the presence or absence of acid, but on the actual amount of acid secreted by the stomach.

We believe that when a tide is present in the urine but hydrochloric acid is not found in the stomach contents, the gastric analyses should be viewed with suspicion. In two of the three cases in which a second fractional gastric test was done on patients when such discrepancies existed acid was found. In one of the nine failures included in the chart, large amounts of mucus were present in all specimens—a condition often associated with an apparent absence of hydrochloric acid which is not a true achlorhydria. In three of the others a total acidity of 20 or more cc. of tenth normal acid per hundred cubic centimeters of gastric juice occurred during the test, and in three others values of between 15 and 20 cc. were found. Since in 150 consecutive gastric analyses in which hydrochloric acid was absent the average total acidity was only 6 cc. of tenth normal acid per hundred cubic centimeters, it does not seem unreasonable to question diagnoses of achlorhydria based on such analyses as these.

In chart 2 are given the cases that could not be classified satisfactorily. The solid dots show seven cases with traces of hydrochloric acid present for a short time in a fractional test. The highest values found were:

Case number	1	2	3	4	5	6	7
Hydrochloric acid	10	3	2	7	21	10	8
Total acid	30	14	18	26	33	26	19

The case with the highest acid showed an achlorhydria very shortly afterward and will be described in detail later. No other values comparable to these were found in the study. Certainly such concentrations should correspond in their systemic effects with an absence of hydrochloric acid, and in only one of these cases was a tide as defined above found.

The dots represent fourteen cases in which we did not think the evidence of the presence of an achlorhydria convincing, as only results of analyses of single specimens, of vomitus, or of uncompleted fractional analyses were available. Seven of these patients showed a tide and seven did not. We feel that more complete gastric studies would have shown the presence of acid in a good proportion of them.

There is some evidence that the intensity of the alkaline tide varies with the kind of foods fed. It has seemed best to study the urine of patients after they have received a meal planned to stimulate the secretion of large amounts of hydrochloric acid by the stomach. Chart 3 shows the effect of two diets on five patients with and seven without hydrochloric acid in the gastric juice. Each patient received the breakfast already described, and in another test one that included beefsteak in addition to the other foods. When hydrochloric acid was present a slightly more marked tide developed after steak was ingested, but there was *no* difference in the two curves when hydrochloric acid was not found in the stomach. Tides were not present in any of these seven patients, nor in two others who received only the steak breakfast.

TABLE 1.—*Results of Observations in Three Cases*

Time	Case A, Normal		Case B, Normal			Case C*
7 to 8........	5.5	5.5	5.7	5.4	6.6	5.3
8 to 9........	6.2	5.9	5.8	5.6	6.9	6.2
9 to 10........	7.4	6.9	6.3	6.2	6.9	7.0
10 to 11........	7.4	6.9	6.7	6.0	7.2	6.7
11 to 12........	7.0	6.7	6.6	5.8	6.5	5.9
12 to 1........	6.3	6.4	5.7	5.8	6.0	

* Case C Gastric						
Time.......	Res.	½	¾	1	1¼	1¾
HCl........	0	0	21	43	34	38
Total......	8	4	47	57	52	54

Table 1 is presented to illustrate the definition of a tide on actual results, and to point out some of the observations which suggest that a test should be repeated. Patients A and B were normal men with acid in the gastric juice who did laboratory work during the tests, and who ate the standard (not the steak) breakfast. In case A both tests show marked tides, for in both the reactions of the third, fourth and fifth specimens are more alkaline than the first by more than 1.0 p_H. The first two tests in subject B show tides; in the first the reaction of the fourth specimen is more alkaline than the first by 1.0 p_H, and in the second one the reactions of the third and fourth specimens are more alkaline than the first by 0.8 and 0.6 p_H, respectively. In the third test on patient B no tide, as we have defined a tide, is present, but the form of the curve is essentially the same as the others on this subject. It is evident that the relatively low acidity of the first specimen is responsible for the absence of a tide as defined, and the result represents a study which should be repeated before a decision is given. C was a patient on whom a diagnosis of achlorhydria had been made elsewhere; in the urine test marked changes in reaction were noted, and in a gastric test done later hydrochloric acid was found.

Table 2.—*Results in Three Cases in Which Gastric Analyses Showed Hypochlorhydria*

Time		Case A		Case B		Case C			
Tide	Gastric	Tide	HCl	Tide	HCl	Tide	HCl	HCl	HCl
7 to 8	Res.	6.9	0	6.8	—	6.5	5	0	0
8 to 9	½	6.6	0	6.4	0	5.9	21	3	0
9 to 10	¾	7.1	0	6.5	0	6.3	11	0	0
10 to 11	1	6.1	7	7.1	5	6.3	0	9	0
11 to 12	1¼	5.3	17	7.2	8	5.7	..	0	0
12 to 1	1¾	5.1	0	6.4	0	...	..	0	0
	2¼	...	0	...	0	...	..	0	0
	2¾	...	..	...	..	...	..	..	0

Table 2 contains results in three cases in which gastric analyses showed hypochlorhydria. Those designated A and B were received after the charts had been prepared. Both show clearly an alkalinity in the first specimen with more acid reactions later; we have often observed this. In case B a tide is present by definition, for the fourth and fifth specimens are more alkaline than the second by 0.7 and 0.9 p_H, respectively. No tide is shown in case A. Case C was included among the ones that were not classified, and showed the highest acidity of any in that group. The form of the curve suggests the presence of a tide, but the changes are not great enough to conform to the definition given. The results of the gastric analyses, which were all done within a few months of one another, show why the case was hard to classify.

Table 3.—*Results of Observations in Seven Cases*

Time	Case A	Case B	Case C	Case D	Case E	Case F	Case G*
7 to 8...........	7.1	6.2	5.2	6.6	7.3	7.6	6.2
8 to 9...........	6.8	6.1	5.2	5.9	7.2	5.6	6.0
9 to 10...........	7.1	5.6	5.4	5.8	5.3	5.6	6.4
10 to 11...........	7.3	6.9	5.3	5.5	7.0	5.5	7.3
11 to 12...........	7.2	5.7	5.3	5.3	7.1	5.9	7.1
12 to 1...........	7.4	5.7	5.4	5.2	6.0	5.6	6.9

* Case G Gastric							
Time..........	Res.	½	¾	1	1¼	1¾	2¼
HCl..........	0	0	0	0	0	0	0
Total..........	4	10	12	11	13	21	20

Patient A in table 3 excreted specimens with an average p_H greater than 7.0, and illustrates tests which we consider unsatisfactory. Changes simulating a tide are present, but they are not great enough to constitute one as defined. The patient had had a gastro-enterostomy performed, and no other studies were done.

Case B illustrates another unsatisfactory test. By the definition a tide is present, but an increased alkalinity is shown in only one specimen, and this forms a rather abrupt interruption to an otherwise smooth curve. Such a result might come from a comparatively short period of overventilation, and should not, we feel, be accepted by itself. The case was diagnosed as achlorhydria elsewhere, and no further studies were obtained in our hospital.

Case C showed a perfectly flat curve with nothing resembling a tide. The patient was suffering from pernicious anemia, and refused to allow a gastric test to be performed. The very high incidence of achlorhydria in this condition is well known.

Case D shows another condition in which an achlorhydria commonly is found. The patient had carcinoma of the stomach, and it was considered inadvisable to carry out a gastric analysis. The result shows an increase in acidity in the first specimens, and no decrease later; i. e., there is no tide.

Case E shows the presence of a tide, although the curve is not as regular, perhaps, as is desirable for definite classification. The case showed an anemia in two counts with color indexes below 0.9. There was, however, a leukopenia, and a high percentage of lymphocytes in the differential counts. Because of cardiac involvement, the physician wishes to avoid passing the tube if possible.

Case F is shown because it illustrates a group of patients on whom the method of study may prove to be of use. The results, which show an absence of a tide, were obtained on a patient with carcinoma of the esophagus who could not pass a stomach tube.

Case G is shown because it did not fit into the classifications used in studying our results. The gastric analysis was done a year before the urine studies were made. It seems to us that the absence of hydrochloric acid noted in the gastric test cannot be accepted by itself because such a high total acidity developed. In the urine studies, a tide was found.

Changes in the reaction of urine known as the alkaline tide have been studied in two groups of cases, one with and one without hydrochloric acid in the gastric contents. The results show that the secretion of hydrochloric acid is of primary importance as a cause of such changes, for following the ingestion of an appropriate meal there generally is a decreased acidity present in the urine of normal subjects which is usually absent from that of patients who have achlorhydria or who secrete very little acid in the gastric juice.

An attempt has been made to define changes that constitute a tide so that the method can be used in the study of individual cases. By this definition a tide was absent in 80 per cent of the cases that showed an absence of hydrochloric acid in a parallel gastric fractional analysis, but present in the same proportion of cases in which significant amounts of that acid were present in the stomach. Although explanations could be suggested in about half of the 20 per cent of failures encountered, we do not feel that it is necessary to press them. We believe that the agreement is sufficiently good to justify us in recommending the method for use in selecting cases in which an apparent achlorhydria is found for further gastric studies before a definite diagnosis is made.

ULTIMATE RESULTS OF ESSENTIAL HYPERTENSION *

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Since the recognition and description of hyperpiesia, essential hypertension or vascular hypertonia by Sir Clifford Allbutt,[1] the condition has slowly been recognized as a clinical entity. By the term essential hypertension, we understand a condition in which the patient has a persistent elevation of the systolic, and usually the diastolic, blood pressure for which there is no demonstrable cause. In the early stages all the patients are without evident cardiac hypertrophy and without demonstrable renal lesions, as evidenced by the fact that the kidneys are able to dilute and concentrate; albumin is rarely present in the urine, and only occasionally a few hyaline casts are found; there is a normal phenolsulphonphthalein excretion, and the chemical components of the blood are normal except for a slight rise in the uric acid content. Eventually, the continued high pressure leads to cardiac hypertrophy and varying degrees of arteriocapillary fibrosis or arteriosclerosis, with perhaps a tendency to affect certain organs more than others.

REVIEW OF CASES

With this conception of the disease, a review of seventy-six cases of essential hypertension occurring in private practice is presented. These cases have been under observation for varying lengths of time, but no case belongs to the group which has not been under more or less constant supervision for at least from five to seventeen years. No attempt to select the patients has been made other than this requirement. During the period of observation, the majority of the patients have been seen at least four or more times in a year, while a few have been seen only once or twice. In all of the cases, at each visit a note has been made as to the blood pressure, the heart and the urine, and in a considerable number, phenolsulphonphthalein and blood chemical studies have been repeated. Many of the patients have received hospital care on one or more occasions during the progress of the disease, because of some unpleasant symptom or complication. In the fatal cases, all patients received hospital care with one exception.

The cause of death was verified by postmortem examination five times; in others, the bedside diagnosis seemed reasonably well established, since the patients had been under close scrutiny before and during the final illness. It is realized that this series is rather small, but it has been strictly limited to a group about which I feel reasonably certain of the data, and all cases of questionable renal origin or with other factors which might produce hypertension, such as frank endocrine cases, have been eliminated, with the exception of cases occurring in women at the time of the menopause. I have not included cases which occurred in diabetic patients. No attempt has been made to arrive at a definite date of onset of the hypertension; this would lead one into a speculative field far removed from this study, as it is well known that the condition may exist for years without symptoms.

Table 1 presents a distribution of the seventy-six cases by age, sex and present state. There are thirty-nine men and thirty-seven women, a rather higher number of men in proportion to women than usually occurs. Of this number, twenty-seven cases in men and twenty-nine in women occurred between the ages of 40 and 60. A very striking difference occurred in the mortality of the two; of the men, only twenty are living, a mortality of 48.7 per cent, while thirty-four of the women are alive, a mortality of 9.2 per cent, a difference in mortality in favor of the women of 39.5 per cent.

TABLE 1.—*Ages of Patients*

Years	Men	Living	Dead	Women	Living	Dead
30 to 34	1	..	1	1	1	..
35 to 39	1	..	1	1	1	..
40 to 44	5	5	..	5	5	..
45 to 49	3	1	2	20	9	1
50 to 54	9	3	6	8	7	1
55 to 59	10	7	3	6	6	..
60 to 64	5	2	3	3	2	1
65 to 69	3	1	2	1	1	..
70 to 75	2	1	1	2	2	..
Totals	39	20	19	37	34	3

In table 2, the duration of observation is shown. One is impressed with the fact that fifty of the patients have been under observation for from five to seven years. After this time the number diminishes. An explanation of this is that other cases which might have been included in later years did not fulfill the requirements of this study, in that the available data following examination are not taken sufficiently often or are not accurate enough to be included in the list. During this five to seven year period of observation of the twenty-four men, only eleven are living, a mortality of 54.1 per cent; whereas, of twenty-six women, twenty-five are living, a mortality of 3.8 per cent. This is decided and convincing evidence that essential hypertension in women is relatively benign during the first seven years in comparison with men.

TABLE 2.—*Duration of Observation*

Years	Men	Living	Dead	Women	Living	Dead
5	13	6	7	7	6	1
6	8	2	6	11	11	..
7	3	3	..	8	8	..
8	2	1	1	..	..	..
9	5	1	4	2	2	..
10	2	2	..	3	3	..
11	1	1	..	2	1	1
12	3	2	1	2	2	..
13	1	1	..	..	..	..
15	1	1	..	..	..	..
16	..	..	..	1	1	..
17	..	..	..	1	..	1
Totals	39	20	19	37	34	3

TABLE 3.—*Complications Arising in Fatal Cases During Their Period of Observation (Not the Cause of Death)*

Eye: Arterial changes; edema of nerve; hemorrhages	7
Precordial pain or distress	11
Angina	9
Asthmatic attacks	2
Dyspnea on exertion	11
Transient attacks of numbness, paralysis, aphasia, unconsciousness	3
Cardiac extrasystoles	3
Cerebral hemorrhages	7
Prolonged attacks of dizziness	2
Evidence of renal impairment	2
Aortic insufficiency	1

Table 3 represents the outstanding complications arising during the period of observation of the fatal cases which were not directly the cause of death, with the exception of the case of angina. Many of these complications were discovered during the course of the first examination, and a far greater number were the direct cause of the patient seeking medical relief. A single patient during the period of observation would frequently exhibit one or more of the complications. Attention is directed to the frequency of complications referable to the heart; these occurred oftener than is ordinarily supposed. Cerebral hemorrhage occurred in six cases; one patient had two apoplectic seizures before dying with the third stroke. One person developed an aortic insufficiency associated with a dilated aorta after being under observation six years. The recorded changes occurring in the eye are perhaps too few, as a careful observation with the ophthalmoscope was not made with as much diligence in former years as later; the findings recorded above were confirmed and frequently supplemented by confrères.

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* Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Allbutt, Clifford: Disease of the Arteries, Including Angina Pectoris, London, the Macmillan Company, 1915.

TABLE 4.—*Causes of Death*

	Men	Women	Duration of Observation, Years	Age at Death, Years	Previous Disability
Accidental	1	...	9	74	Cerebral hemorrhage; angina
Carcinoma of prostate	1	...	6	75	Angina pectoris
Carcinoma of bladder	1	...	6	61	Angina pectoris
Rupture of abdominal aneurysm	1	...	9	70	Cerebral hemorrhage; retinal hemorrhage
Cerebral hemorrhage	1	...	5	51	
	1	...	8	59	Angina; renal insufficiency; vertigo
	1	...	6	59	Angina; cerebral hemorrhage; dyspnea on exertion
	1	...	9	59	Two cerebral hemorrhages; angina; retinal hemorrhage
	...	1	5	63	Cerebral hemorrhage; angina
	1	...	6	70	Cerebral hemorrhage; angina
Uremia	1	...	6	63	Angina pectoris; retinal hemorrhage
Myocardial insufficiency	1	...	5	37	Retinal hemorrhage
	1	...	5	52	Retinal hemorrhage; angina
	1	...	5	52	
	...	1	11	58	Asthmatic attacks
	...	1	17	55	Asthma; angina
	1	...	5	59	Transient paralysis; cerebral hemorrhage; retinal hemorrhage
	1	...	5	62	Transient paralysis
Thrombosis of coronary artery	1	...	6	57	Angina pectoris
Angina pectoris	1	...	9	51	
Found dead in bed	1	...	5	39	Retinal hemorrhages
	1	...	12	65	
Total	19	3			

Table 4, which gives the cause of death with the distribution as to age and sex, is of interest in that of the twenty-two deaths, seven are from vascular accidents; nine are cardiac deaths; three are from causes unrelated to their essential hypertension, and only one is from uremia. A closer analysis of the cases of cerebral hemorrhage shows among the men that the average time of observation was very nearly seven years; in the patients dying with cardiac insufficiency, among the men the average period of observation is only five years, while among the women the average is fourteen years. This is suggestive evidence that myocardial failure as a cause of death among the men occurs earlier than cerebral hemorrhage, but that in the women it is a late cause of disaster. Of the seven patients dying because of myocardial defect, only three presented symptoms which would lead one to suspect that this would be the final outcome. Four of the six patients dying with cerebral hemorrhage had, during the course of the disease, previous apoplectic seizures from which they partially recovered. One of these patients had two previous strokes before the third caused a fatal termination. The deaths in this series from cardiac involvement outnumber those from vascular accidents, but the difference is not so great as to be very striking. The one death from uremia is quite significant in that evidence of renal impairment first made its appearance approximately two years before the fatal outcome, and after the patient had been under observation for four years. Two of the patients were found dead in bed, and there were no previous symptoms which would lead to a probable cause; postmortem examination was denied in both.

TABLE 5.—*Blood Pressure in Fatal Cases*

At Time of Observation		Last Observation Preceding Fatal Illness		Period of Observation, Years	Cause of Death
Systolic	Diastolic	Systolic	Diastolic		
230	152	260	160	5	Myocardial insufficiency
210	156	230	160	5	Found dead in bed
186	142	210	160	5	Myocardial failure
220	120	220	140	5	Myocardial failure
196	...	220	130	11	Myocardial failure
240	140	260	134	5	Cerebral hemorrhage
200	120	210	120	8	Cerebral hemorrhage
208	116	216	130	9	Angina pectoris
168	120	164	100	6	Cerebral hemorrhage
240	...	226	120	17	Myocardial failure
180	116	190	120	6	Embolism of coronary artery
190	...	228	128	5	Myocardial failure
270	140	250	140	9	Cerebral hemorrhage
176	...	158	80	12	Found dead in bed
190	...	182	100	6	Carcinoma of bladder
220	100	214	140	5	Cerebral hemorrhage
170	80	160	70	5	Myocardial insufficiency
240	154	246	165	6	Uremia
230	120	172	100	6	Cerebral hemorrhage
212	114	160	100	9	Ruptured aneurysm
178	88	148	100	6	Carcinoma of prostate
194	98	160	80	9	Accident

Table 5 is an attempt to convey some idea of the blood pressure during the period of observation of the fatal cases. It is realized that such an attempt can be quite misleading, because it is well known that in practically all of these cases there is a considerable fluctuation in the pressure from month to month and from year to year. The blood pressure, which is given at the time of observation, is the lowest pressure obtained after the usual excitement of history taking and routine physical examination has subsided. During the period of observation and treatment, it is impossible to give an accurate account of the variation of the pressure in all of the cases, so that there is recorded only the blood pressure at the beginning, when the patient first came under observation, which might be called the established blood pressure of observation, and the last blood pressure recorded before the onset of the fatal illness. Some of these readings were made before the standard arm cuff was in general use, so that the established pressure in a few of the cases is too high. The

TABLE 6.—*Complications Arising in Living Patients During Period of Observation*

1.	Eye: Tortuous vessels; edema; hemorrhages; choroiditis	16
2.	Precordial pain or distress	7
3.	Angina pectoris	5
4.	Dyspnea on exertion	8
5.	Myocardial failure	3
6.	Cardiac asthma	3
7.	Cardiac extrasystoles	2
8.	Systolic murmur at apex	12
9.	Systolic murmur over aortic area	2
10.	Pulmonary edema	1
11.	Cerebral hemorrhage	6
12.	Transient attacks of numbness and paralysis	2
13.	Prolonged attacks of dizziness	6
14.	Other diseases requiring major surgical procedures	3
15.	Renal impairment	2

striking thing is that, of the twenty-three patients, twelve had a pressure of 200 or more at the time of the first examination, with a relative increase in the diastolic reading, and the pressure had a tendency to remain at a constant level or even to go higher until the fatal illness. One patient lived seventeen years with a blood pressure which was never found under 200. Of the twenty-three fatal cases, eleven showed a heart that was enlarged, as determined by physical examination at the time of first observation, and sixteen gave evidence of cardiac hypertrophy before death; in nine cases there was evidence of dilatation of the aorta.

TABLE 7.—*Approximate Blood Pressures of Living Patients*

Duration of Observation, Years	Age	Sex*	Blood Pressure at Time of First Observation		Blood Pressure at Last Reading		Complications
			Systolic	Diastolic	Systolic	Diastolic	
5	33	♀	204	136	200	100	
5	40	♀	190	110	160	100	
5	40	♀	196	100	200	110	
5	41	♂	200	110	230	120	Retinal hemorrhage; myocardial failure
5	43	♂	166	118	180	120	Asthma; angina; cardiac extrasystole
5	44	♂	168	108	140	190	Asthma
5	47	♀	202	128	190	110	
5	48	♀	180	110	150	100	Cholecystectomy
5	48	♀	172	98	140	80	
5	54	♂	160	112	160	100	Gastro-enterostomy
5	61	♂	215	118	180	100	
5	70	♂	172	86	160	80	Dyspnea on exertion
6	39	♀	180	110	150	100	
6	44	♂	158	110	172	122	Retinal arteriosclerosis; dyspnea on exertion
6	44	♀	164	90	152	90	Retinal arteriosclerosis
6	47	♀	190	106	140	90	
6	48	♀	186	120	134	80	Retinal hemorrhage; exudates
6	51	♀	160	110	168	90	
6	53	♀	174	100	180	110	
6	55	♀	170	90	130	80	
6	58	♂	210	120	206	116	Cataracts; retinal arteriosclerosis
6	59	♀	160	80	146	80	
6	62	♀	214	130	160	80	
6	70	♀	180	70	150	80	
6	70	♀	168	90	110	70	Angina; marked dyspnea on exertion
7	43	♂	170	140	180	110	
7	44	♀	200	120	160	100	Attacks of transitory numbness; hemiplegia, monoplegia
7	46	♀	210	120	150	80	
7	51	♀	220	110	160	100	Retinal hemorrhage
7	51	♂	200	100	150	98	
7	55	♂	160	100	170	90	Retinal arteriosclerosis
7	56	♀	160	80	154	96	Retinal arteriosclerosis; menopause, 38
7	..	♀	192	96	154	96	Cardiac extrasystole; dyspnea on exertion
7	57	♀	190	98	140	90	
7	62	♀	200	104	186	114	
8	68	♂	260	160	150	90	Asthma; angina
9	46	♀	160	100	140	80	
9	50	♀	176	100	178	100	Extrasystole; retinal arteriosclerosis
9	55	♂	190	120	188	110	Angina; retinal arteriosclerosis
10	48	♀	204	110	160	90	
10	53	♀	180	...	164	124	Cerebral hemorrhage
10	56	♂	174	102	176	110	Prolonged attacks of dizziness; renal stone
10	56	♂	172	...	180	120	Angina
10	67	♀	196	100	140	86	Retinal arteriosclerosis; cerebral hemorrhage
11	46	♀	214	120	180	110	Retinal hemorrhage; vertigo severe; slight renal impairment
11	58	♂	180	...	170	120	Precordial pain; retinal arteriosclerosis
12	43	♀	210	...	150	90	Retinal arteriosclerosis; precordial pain
12	53	♂	290	...	240	120	
12	55	♀	180	...	160	100	Cerebral hemorrhage
12	56	♂	184	...	170	100	Cerebral hemorrhage; angina
13	49•	♂	190	...	160	110	Cerebral hemorrhage; retinal arteriosclerosis, systolic at apex
15	51	♂	180	...	170	100	Cerebral hemorrhage; prolonged dizziness; cholecystotomy
16	46	♀	228	125	180	120	Retinal hemorrhage; transient monoplegia; cerebral hemorrhage; dizziness

* In this column, ♂ indicates male; ♀, female.

Of the fifty-four patients living, there are twenty men and thirty-four women. The complications arising in these cases, either discovered during physical examination or as a symptom causing the patient to seek relief, are shown in table 6. Symptoms and physical findings referable to the heart are much more common than those referred to other systems. Myocardial failure of a mild degree has occurred in three patients, from which they have sufficiently recovered to be about with a fair degree of comfort, six patients have had definite hemiplegias, which were equally divided between men and women. Four cases of angina occurred in men and one in a woman. Only two cases show evidence of renal impairment.

An attempt is made in table 7 to give an approximate idea of the blood pressure readings in the living patients; these observations are recorded as at the time of first observation and the last reading. Of this number, eighteen had an established pressure of 200 or over (six men and twelve women). Four of the patients have during the period shown a constant reduction in blood pressure below the relative figure of 160 systolic and with an approximate normal diastolic reading. Of the entire group, fifteen women and four men have a constant pressure now below 160. All feel well and suffer no discomfort, except one patient with a systolic pressure around 110; this patient's lowered pressure is due to myocardial degeneration, and on slight exertion she suffers with anginal attacks.

Of great interest is the group occurring in women from 40 to 50 years old and associated with symptoms referable to the menopause. Sixteen of the thirty-seven cases belong to this group; fifteen patients are living and one is dead. Of the fifteen patients, two have had leftsided hemiplegias; three have had retinal hemorrhages; one, precordial distress on exertion; two, retinal arteriosclerosis without hemorrhage, and in five cases the blood pressure, both systolic and diastolic, has practically returned to normal. Attention has frequently been directed by Riesman,[2] Cummings,[3] Wright,[4] and others to hypertension in this period of life in women and the fact that it is seldom associated with accidents.

SUMMARY

In a review of seventy-six cases of essential hypertension observed from five to seventeen years, the number of cases was about equally divided between the two sexes.

The mortality for the group of men was 48.7 per cent, and for the women, 9.2 per cent, a difference in favor of the women of 39.5 per cent. During the five to seven year period of observation, the mortality was remarkably higher among the men.

Myocardial failure occurred earlier than cerebral hemorrhage among the men. It occurred much earlier in men than in women.

Death from cerebral hemorrhage in a majority of the cases was preceded by a previous apoplectic seizure The greater number of deaths occur because of heart and blood vessel weakness.

The renal involvement in the late stages of this disease is usually very slight, only one death occurring in the series because of renal failure.

Essential hypertension occurring in women about *the time of the menopause is relatively benign and is* associated with fewer accidents and complications than for a similar group in men.

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[2] Riesman, David: Hypertension in Women, J. A. M. A. 73:330 (Aug 2) 1919

[3] Cummings, R: California State J Med 19:116 (March) 1921.

[4] Wright, F.: M. Clin. N. Amer. 3:1735 (May) 1920.

No definite conclusions can be drawn as to the end-result in a given case from a study of the blood pressure alone.

No definite prognosis can be given from a study of the blood pressure, the prognosis depending on the integrity of the heart and blood vessels.

436 Peachtree Street.

CIRCULATORY TONICS VERSUS CIRCULATORY DEPRESSANTS

IN CARDIOVASCULAR RENAL DISEASE WITH HYPERTENSION [*]

CLARENCE L. ANDREWS, M.D.
ATLANTIC CITY, N. J.

The title of my paper is somewhat misleading, because one might infer that I consider hypertension as a disease within itself and that the subject matter which follows sets forth data to substantiate those facts. Both presumptions are entirely wrong, because my whole purpose in this paper is to try to discourage that very thing by attempting to show that if one classifies his cases properly, the blood pressure will take care of itself.

About ten years ago, while dealing with cardiovascular renal disease in patients who come to Atlantic City from many sections of the United States and Canada, I became very much interested in the observation of three prominent facts: First, it mattered not just what type of this group of diseases the individual was suffering from, one and the most talked about symptom and dread in his mind was his high blood pressure. When any explanation was offered in trying to point out that the increased blood pressure might be in his particular case a physiologic necessity, there was invariably no further interest shown. Second, it made very little difference also just what was causing the hypertension; the chief and foremost remedy furnished by the family physician in treating the case seemed to be the nitrites or circulatory depressants in some form. Third, in many instances in which the physician furnished a letter of instructions to the patient explaining the salient points in his case, he usually laid the greatest emphasis on the hypertension. Moreover, the systolic blood pressure reading alone was usually given, and no mention was made of the diastolic pressure, which many clinicians had begun to feel furnished perhaps more information concerning the circulatory strain than the systolic did.

Feeling perhaps that the explanation for such a wide use of the nitrites in these cases lay in the fact that only the systolic blood pressure reading was taken, and that unquestionably these cases of hypertension were all placed in one large group, as being alike in character by many physicians, I made an attempt to classify them into several groupings, the results of which were published under the title "Importance of Careful Diastolic Blood Pressure Observations in Cardiac and Cardiorenal Diseases.[1]"

Since that time these observations have been continued, and while scarcely no one speaks of the systolic blood pressure alone to day but mentions all three phases, the high, the low and the pulse pressure, the one interesting fact still remains; namely the nitrites are the chief remedy used in hypertension by many of our profession, apparently without regard to cause or type.

Therefore hypertension, while viewed by many as not being a disease within itself but an expression of the circulatory force or strain under which the heart must labor in order to carry on its work, is unquestionably not so viewed by many of us, but is looked on as being a distinct disease itself. This is unquestionably true, as will be dwelt on later, because of the methods of treatment pursued by many physicians in attempting to alleviate it.

The wide and extensive use of the nitrites or circulatory depressants in hypertensive cases, without regard to type or cause, leads one to feel that there exists a widespread fear that the use of the digitalis bodies or circulatory tonics in these cases would raise the blood pressure still higher than it happens to be.

In the face of this large group of patients with cardiovascular renal disease with hypertension, each one of whom presents a somewhat different clinical picture, yet many of whom depend on the nitrites or some form of circulatory depressant as his chief anchor of safety, one feels that if any single line of treatment can benefit all patients without regard to cause, it most probably is not the correct therapeutic stay in at least a few of them.

This led me to make a second attempt to classify these cases of hypertension under group headings due to causes, in order to see if additional light might not be thrown on the subject. During the last ten years, quite a large amount of data have been collected, and while not exact and wholly dependable, as many phases are not at all well understood, they may, I hope, assist in collecting further data on the subject to enable us ultimately to understand better this perplexing problem.

We owe a great deal in this field to experimental physiologists for their work done on the heart muscle function and for calling our attention to two of the most fundamental qualities of heart muscle action, which places it in a class by itself and perhaps forms the basis on which many of the circulatory problems may be worked out. I refer to the great necessity for the heart muscle to have constant blood supply and to rest, and its wonderful power to recuperate and maintain its efficiency when given sufficient relaxation and rest between beats. Moreover, it is the actual motor power back of all blood pressure readings high or low, and is the one source through which our information must necessarily come concerning circulatory tension in any of its forms. It does not matter whether it is weakened heart muscle, increased peripheral resistance or sclerosed kidney or vasomotor let-down that is at fault; the systolic force of the heart beat, as expressed on the blood pressure machine, and the diastolic pressure, as the extracardiac circulatory strain, are our only guides as to whether the blood pressure is hypotensive or hypertensive, as the case may be.

Using, therefore, the blood pressure readings as the motor expression of the circulatory apparatus in physiologic action, I have partially worked out the following groupings:

CLASSIFICATION

1. Hypertension without apparent cause, with diastolic pressure less than 100, as reported by Dr. Riesman of Philadelphia, which occurs in women about the meno-

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[*] Read before the Section on Practice of Medicine at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

[1] Andrews, C. L.: J. M. Soc. New Jersey **19**: 33 (Feb.) 1922.

pause and which tends to right itself as the menopausal symptoms are alleviated.

2. Hypertension with a well sustained systolic pressure with a diastolic above 110, and whose diastolic falls to 100 or less and the systolic also falls, when rest and eliminative treatment are carried out.

3. Hypertension with a well sustained systolic pressure and a diastolic above 110, whose systolic falls under rest and eliminative treatment, but whose diastolic remains at or above 110.

4. Hypertension with a systolic pressure not well sustained, but which vacillates from 10 to 20 points on the blood pressure machine as the pressure it taken, with a diastolic about 110, both of which come down under rest and eliminative treatment, but whose systolic begins to vacillate again following slight physical exertion and the diastolic goes back to about 110.

5. Hypertension with systolic pressure well sustained and with diastolic below 100, usually found in highly neurotic persons of both sexes and which responds very little to any form of treatment, but remains high in spite of all one can do.

As time will not permit by taking up each type in detail, it is about the vacillating hypertensive type of patient whose whole mode of life is greatly hampered by fatigue, shortness of breath and incapacity that I speak most particularly.

As pointed out by Christian[2] and others, there is perhaps no type of case in internal medicine which will respond more readily to treatment than these will when properly recognized. Moreover, there is always a stage quite in advance of dilation or break in compensation when these patients can be greatly benefited before the circulatory symptoms, as usually given, are manifest.

Then, fundamentally and physiologically, what do these vacillating circulatory symptoms mean—blood pressure readings that do not register constantly on the blood pressure machine, but vary from 10 to 20 points as the systolic pressure is held at its maximal point? It is the language of a tired out heart muscle crying for help, one whose tone will not permit all contractions to register with the same force. Perhaps, as before stated, one of the most fundamental properties of the heart muscle is its ability to recuperate when given sufficient time to relax, but it must have rest to assure efficiency. In hypertension, this cannot occur both because of the great force the heart muscle must exert to keep up the circulation and because of the correspondingly high diastolic pressure, which adds increased resistance to the heart's efforts before the semilunar valves can be forced open at each heart beat.

It is not unlike starting one's automobile engine in high gear. The powerful motor, which can speed the car away if placed in first, second and then high, cannot do so if placed in high to begin with, because the load is too great. Nor can the heart muscle stand up under a high diastolic pressure which must be overcome each time the heart beats, before the circulation can be set into motion. In many of these cases, the diastolic pressure is as high as the systolic should be. The high pressure must come down; the muscle must have rest, or the inevitable will follow, and the usual sequelae of a failing circulation will ensue.

These patients do not need circulatory depressants to lower the hypertension, as the seat of the trouble is not in a restricted arterial bed with a heart pumping up against resistance, but is due to a fatigued, somewhat dilated, poorly toned up heart muscle, whose lack of contracting force has gotten itself into a circulatory hazard and cannot, unassisted, overcome it. What these patients need is rest, cardiac support to decrease the pulse rate, increase of the muscle force and nutritional diet.

As soon as the heart muscle regains its tone, the venous stasis will be overcome; the digestion will be improved and the hypertension will take care of itself by lowering both the systolic and the diastolic pressures.

I agree with Christian and others that next to auricular fibrillation, there is perhaps no type of case that will show more brilliant results from tonic doses of the digitalis bodies than these patients do.

These are not new thoughts, but are well known to many clinicians and are practiced by them every day. It is to the man who treats all of these cases of hypertension without regard to type with the nitrites or cardiac depressants, because he apparently views it as a distinct disease, that I wish to direct my remarks, as I feel that further emphasis on classifying these patients before treating them for blood pressure alone cannot be too forcibly made.

While the nature of my topic confines my remarks to hypertension as a diagnostic guide, it is by no means my purpose to imply that these cases can be diagnosed and the patients treated by the sole use of the blood pressure machine. Quite the contrary, as every patient with cardiovascular renal disease must have all the modern clinical and laboratory tests and check-ups made before one can say whether the heart muscle, the circulation in general or the cardiocirculatory renal let-down is at fault. If this is done, all the various types with hypertension as a part of their clinical picture will not be treated alike.

There is no short cut to godliness, nor is there any short cut to diagnosis. But he who understands the normal and is able to view the whole pathologic picture in so intricate a mechanism as the human make-up as a whole has his house in order for doing good work.

REPORT OF CASES

The following cases have been taken from both my private and hospital records, and an attempt is made to arrange them as nearly as possible according to type. Many may not be so classified on final analysis, but may fall into several groupings. They therefore are offered merely as a basis on which to work, particularly by men located where all the finer diagnostic tests cannot be carried out.

Group 1.—Number of cases, eighteen. Age range, from 40 to 51 years.

Chief Complaint.—1. None, but told she had high pressure. 2. Nervously upset, insomnia, fear of high pressure. 3. Hot and cold sensations, pain in back of neck and head.

Physical Examination.—Head, normal. Chest, normal. Abdomen, from normal to vague gastro-intestinal disturbances. Reflexes, normal to overactive. Blood pressure: systolic, from 160 to 190, well sustained; diastolic, from 70 to 95, well sustained.

Laboratory Tests.—Blood, normal. Urine, normal. Blood urea, within normal. Creatinine, within normal. Phenolsulphonphthalein, within normal. Wassermann, negative.

Results.—Omitting nitrites previously given and using corrective measures, sedatives and ovarian substance, in indicated cases, and rest and diet.

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[2] Christian, H. A.: Digitalis Therapy: Satisfactory Effects in Cardiac Cases with Regular Pulse Rate, Am. J. M. Sc. **157**: 593 (May) 1919; Digitalis Effects in Chronic Cardiac Cases with Regular Rhythm in Contrast to Auricular Fibrillation, M. Clin. N. Amer. **5**: 1173 (March) 1922; Tr. A. Am. Physicians **37**: 284, 1922; Digitalis in Cardiac Disease, Boston M. & S. J. **187**: 47 (July 13) 1922; J. Iowa M. Soc. **12**: 307 (Aug.) 1922.

Blood Pressure.—Systolic, from 120 to 155, well sustained; diastolic, from 70 to 90, well sustained.

General condition improved.

Group 2.—Number of cases, twenty-seven. Age range, from 46 to 77.

Chief Complaint.—1. High blood pressure. 2. No special symptoms, but told of high blood pressure. 3. Headache, dizziness and not feeling well. 4. Pains and pressure about heart.

Physical Examination.—Head, from normal to nose and throat congestion. Chest, normal. Abdomen, full and gaseous; evidence of poor elimination. Reflexes, normal to overactive. Blood pressure: systolic, from 165 to 195, well sustained; diastolic, from 90 to 110, well sustained.

Laboratory Tests.—Blood, normal. Urine, normal. Blood urea, within the normal. Creatinine, within the normal. Phenolsulphonphthalein, within the normal. Wassermann, negative.

Results.—Omitting nitrites or cardiac depressants; instituting rest, elimination and diet.

Blood Pressure.—Systolic, from 140 to 165, well sustained. Diastolic, from 80 to 100, well sustained.

General condition much improved.

Group 3.—Number of cases, forty-four. Age range, from 42 to 71.

Chief Complaint.—1. High blood pressure. 2. Hypertension found in routine examination. 3. Headache, dizziness, no endurance and pains in legs with weakness on walking. 4. Bounding pulse in head and chest on exertion.

Physical Examination.—Head, nothing of importance. Chest, from normal to increased cardiac dulness, bounding pulse and accentuated aortic second sound. Abdomen, normal, full and firm. Reflexes, from normal to sluggish. Blood pressure: systolic, from 170 to 220, well sustained; diastolic, from 110 to 120, well sustained.

Laboratory Tests.—Blood, from normal to secondary anemia. Urine, from normal to low gravity, hyaline and granular casts, occasional pus cell. Blood urea, from upper normal to increased retention. Creatinine, from normal to upper normal. Phenolsulphonphthalein, from normal to low elimination. Wassermann, negative.

Results.—Omitting nitrites and instituting rest, diet and elimination and tonic doses of digitalis.

Blood Pressure.—Systolic, from 140 to 168, well sustained. Diastolic, from 100 to 110, well sustained.

General condition much improved to slight improvement.

Group 4.—Number of cases, sixty-three. Age range, from 38 to 76.

Chief Complaint.—1. Shortness of breath and cough on exertion. 2. Indigestion and belching of gas. 3. Does not feel well and tires easily. 4. High blood pressure.

Physical Examination.—Head, from normal to a flushed appearance of face and mucous membranes. Chest, heart sounds, from normal to distant on auscultation; lungs, from normal to some fine crackling râles at bases. Abdomen, from normal to slight hepatic enlargement and gas distention. Reflexes, normal. Blood pressure: systolic, from 140-160 to 200-220, not well sustained; diastolic, from 90-100 to 100-110, not well sustained.

Laboratory Findings.—Urine, from normal to concentrated, very acid and trace of albumin. Blood, from normal to an increase in red cells and hemoglobin. Blood urea, within the normal. Creatinine, within the normal. Phenolsulphonphthalein, within the normal. Wassermann, negative.

Results.—Omitting the nitrites and instituting rest, elimination and diet. Blood pressure: systolic, from 150 to 190, better sustained; diastolic, from 95 to 105, better sustained. Return to work and gradual return of former symptoms. Put on tonic doses of digitalis.

Blood Pressure.—Systolic, from 140 to 174, well sustained. Diastolic, from 72 to 90, well sustained.

Great general improvement.

Group 5.—Number of cases, fourteen. Age range, from 34 to 62.

Chief Complaint.—1. High blood pressure. 2. Pounding nervous heart. 3. Nervously upset and unable to sleep.

Physical Examination.—Head, from normal to slight suggestive thyroid enlargement. Chest, from normal to rapid bounding heart. Abdomen, from normal to vague areas of abdominal tenderness. Reflexes, from active to overactive. Blood pressure: systolic, from 170 to 200, well sustained; diastolic, from 82 to 100, well sustained.

Laboratory Findings.—Urine, within the normal. Blood, within the normal. Blood urea, within the normal. Creatinine, within the normal. Phenolsulphonphthalein, within the normal. Wassermann, negative.

Results.—Omitting nitrites and instituting rest, diet and elimination. Slight improvement, but varied up and down without any permanent gain.

General condition not much benefited.

SUMMARY

Group 1 represents a type of case that will usually take care of itself and should give us no special concern.

The patients in group 2 evidently had a hypertension due to a toxic basis, which returned to within the normal when the bowels and kidney eliminated freely.

Group 3 seems to show a definite increase in peripheral resistance due to real changes in the cardiovascular apparatus.

Group 4 is encountered in that type of patient with slight hypertrophy and dilatation, with a resultant poorly toned up heart muscle that needs support to increase its tone.

Group 5 has some yet unexplained cause for the hypertension, which does not respond to treatment, and most probably has some endocrine imbalance as its background.

CONCLUSIONS

1. There is abundant evidence that many treat hypertension as a disease itself.
2. There is a widespread fear that digitalis raises the blood pressure and should not be used in hypertension.
3. These cases can be partially classified by watching the blood pressure in conjunction with treatment results.
4. Tonic doses of digitalis should be given in hypertensive cases of long standing to support the heart muscle.
5. Patients with hypertension of long standing do better if the blood pressure is not lowered too much.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. PAULLIN AND ANDREWS

Dr. John B. Nichols, Washington, D. C.: I wish to call attention to the usefulness of sodium sulphocyanate in the treatment of hypertension. Fourteen years' experience leads me to believe that this drug is the most efficacious one now available for the reduction of hypertension. It is used in doses of from 1 to 5 grains (0.065 to 0.3 Gm.) three times a day. Favorable results are not obtained in all cases, especially in those in which renal or other organic changes have become well established, but in a large proportion of the cases a great decrease of blood pressure can be effected which can be maintained for a considerable period. We are not unmindful of the fact that because of our ignorance of the etiology and pathology of hypertension, the treatment is to a large extent empiric. We realize that diet and rest constitute the main parts in the treatment of the condition. We also appreciate that there are naturally and spontaneously large fluctuations in blood pressure which appear from time to time; also that the action of the drug may be transitory. In spite of all these conditions, however, we believe that there is a field for drug therapy for the reduction of hypertension. We believe that we can get this effect from sulphocyanate better than from any other drug we have used. The name sulphocyanate sounds formidable and dangerous; but there need be no apprehension as to any danger from it in the usual dose. The drug passes through the system unchanged and can be obtained quantitatively in the urine. In its chemical and pharmacologic properties, sulphocyanic acid is distinct from the deadly hydrocyanic acid group, and there is no danger of any conversion of sulphocyanic acid into prussic acid or cyanides in its passage through the body. The contrary change, that is, from the hydrocyanic to sulphocyanic, is far more easily effected both in vitro and in vivo. The sulphocyanates do have very potent pharmacalogic properties in sufficiently large amounts. The lethal dose in guinea-pigs is from 200 to 300 mg. per kilogram of body weight; proportionately, the fatal dose in a person of average size would be from 15 to 30 Gm. As a matter of fact, 30 Gm. of ammonium sulphocyanate has been taken by a man with only comparatively slight results. One hundred grams of ammonium sulphocyanate has been taken with suicidal intent, and the victim died in the course of two or three days. In another fatal case an unknown amount of sulphocyanate was taken for suicidal purposes, and the victim died in the course of two or three days. The toxic results in experimental animals are mainly diarrhea, loss of body weight, and later intense spinal irritation, producing clonic and spastic conditions similar in every respect to the effect of tetanus and strychnine. In the ordinary therapeutic doses there need be no fear of toxicity. Nausea and gastro-intestinal upset are frequently produced after prolonged administration, but that can be controlled by reduction or discontinuance of the drug.

DR. H. A. CHRISTIAN, Boston: I should like to call attention to the large number of patients referred to by Dr. Andrews, whose chief complaint was "high blood pressure," and to ask whether you do not think this chief complaint should have been, "I had an injudicious physician." I should like very much to participate in a debate as to whether the discovery of blood pressure apparatus had been injurious or beneficial to humanity. I would take the side that, on the whole, it has perhaps done more harm than it has done good, and the reason for that is that many patients are disturbed by being told what their blood pressure is and would get along perfectly well if one treated them knowing their blood pressure and they being ignorant.

In regard to Dr. Paullin's paper, I think the important things to remember are that few of these patients die as a result of uremia or have manifestations of nephritis. I have accumulated data on a somewhat different basis, because I have taken the patients who have died in the hospital, having among other diagnoses high blood pressure. I have 131 such cases, seventy of which have been checked at necropsy. Only six, or 4.5 per cent, of those patients died of uremia or had extensive chronic nephritis. Twenty-five per cent died of something that had nothing whatever to do with the high blood pressure, so that if one has high blood pressure, one's chances are 1:4 of living out one's life not seriously disturbed by high blood pressure, and dying of something else. Twenty-five per cent died of cerebral accident, of course, largely cerebral hemorrhage. Thirty-two per cent died of cardiac failure. Twenty-five per cent had chronic myocardial failure without valvular disease, and I presume that the hypertension had a good deal to do with producing this condition. Five and three-tenths per cent died of cardiac infarction, and two had a dissecting aneurysm which was not syphilitic. Then there was a group of six cases of aortic insufficiency, and here probably, the hypertension had no particular part in causing death. The point I want to emphasize in the figures is that 25 per cent of the patients died of cerebral accident; 32 per cent died of cardiac failure which appeared to be referable to high blood pressure, and 25 per cent died of diseases that had no bearing whatever on the hypertension. The hypertension probably did not speed their death. Only 4.5 per cent died a renal death.

DR. E. G. GRAVES, Houston, Texas: In the group of cases that we have seen since September 1, 12 per cent have shown high blood pressure (that is, in excess of 150 systolic and 90 diastolic). The most striking feature of this group has been the fact that 50 per cent of the patients have been overweight. One or two per cent have shown retinal changes. I find it convenient to divide cases of hypertension into three groups, more or less from the standpoint of treatment. The first group is that which has been spoken of today as hyperpiesia. The second group is that in which hypertension is associated with arteriosclerosis, or, as some prefer to call it, diffuse sclerosis or atherosclerosis. The third group consists of hypertension cases with associated nephritis. I was gratified to hear Dr. Paullin separate precordial pain from the pain of angina pectoris. Precordial pain essentially means pain in the region of the diaphragm. Dr. Andrews' experience that spirit of glyceryl trinitrate and nitrates do little good in cases of hypertension corresponds with our own.

The main point in this group of cases is the fact that many patients, particularly those in the group of essential hypertension or hyperpiesia, are overweight. Life insurance statistics show that obesity is a very serious complication of hypertension. It behooves us to see that these patients have the best opportunity of living, and we can present that opportunity best by reducing their weight.

DR. WALTER SHROPSHIRE, Yakima, Texas: I am struck with the fact that the classification of the condition is not touched on in the field that seems to me to be most fruitful for future good. In classifying the hypertension cases, they have not separated those of nervous origin from those of an essential condition perhaps of the artery. I noticed in one of the reports of results that women around the menopause had hypertension which subsided when that period was passed and the women lived, while men around a similar age had hypertension that did not subside and they died. It occurs to me that the author failed to discriminate between one of nervous origin and the other of an essential arterial, perhaps, character, or chemical substances acting in the arteries or smaller blood vessels that resulted in continued onward and downward effects. I believe that when we come to that discrimination we shall be in a better field for study. Patients with a high systolic and diastolic pressure that does not change radically drift toward cardiorenal disease. Cases with an essentially weak or crippled heart, and in heart failure, and those with a powerful and compensating heart, go on to renal involvement. Some poison is put into the blood which poisons the arteries and lessens their elasticity. If the end is not apoplexy, the heart is overcome by work it is unable to do. If that organ stands up, the kidneys are the victim. Those are the cases of hypertension that cause us alarm. They might be classed as organic in their etiology, in contradistinction to those of a nervous origin, such as those occurring in women about the menopause and under emotional excitement. The latter, under a little rest and outdoor fresh air and freedom from the mental excitement and the knowledge that they have high blood pressure, promptly return to normal. The other class of patients, usually men of affairs who live a mental life and give small attention to what they eat or who eat more than they can digest, have a high blood pressure that is well established and resistant to treatment. I am inclined to think that the trouble lies in the digestive tract.

DR. LLEWELLYS F. BARKER, Baltimore: In regard to Dr. Paullin's paper and Dr. Christian's comments on it, it is my experience that people with high blood pressure, no matter whether it be so-called essential hypertension or other forms of hypertension, ultimately die in one of five different ways: (1) cerebral insult; (2) heart failure due to myocardial insufficiency; (3) coronary disease with angina pectoris; (4) uremia (less common), or (5) terminal infections. Dr. Andrews emphasized the desirability of supporting the heart in these cases, independently of the existence of hypertension. Digitalis will sometimes lower the blood pressure instead of raising it. Myocardial insufficiency of severe grade can often be prevented by the early recognition of signs of the beginning of the disturbance. Whether or not it is feasible to carry out Dr. Christian's advice of not informing the patient of his hypertension is a question. If we do not inform him, somebody else will. At present, most patients know of their hypertension before they come to consultants at least. I have always maintained, accordingly, that psychotherapy (in the sense of explanation, the calming of fear, and education to hygienic living) is one of important measures to be applied in treating the high blood pressure patient.

Dr. Eugene S. Kilgore, San Francisco: Dr. Christian emphasizes the harm often resulting from patients knowing too much about their blood pressure, and Dr. Barker states reasons for frankly giving them the information. Both points of view are illustrated in a former patient of Dr. Barker's, an active lawyer of 65 with excellent physical status in every way except for moderate hypertension, which he had known for some years before; in fact, he visited Dr. Barker. Some time ago, on returning from a trip to the country, he seemed very much depressed and began discussing retirement from his profession, sanatoriums, etc., and it was clear that he felt the end to be near and intended acting the part of an orthodox invalid, all this without any new symptoms of any consequence. I was quite mystified until a few days later, when I learned the story from one of his law partners. While the patient was in the country he had called a physician for some trifling complaint, evidently a careful man, because he determined the blood pressure but said nothing about it. Now our penetrating legal observer noted the physician's failure to comment on the hypertension and quickly deduced from this and from a "look in the doctor's eye" all the evil forebodings with which he returned to San Francisco. The moral of this story carries us one step beyond Dr. Christian's advice. We should avoid not only unnecessarily alarming patients by talking too much about their blood pressures, but should even more carefully avoid giving the impression that we are unwilling to mention it. Since that incident I have used the blood pressure machine less often, at least in follow-up work; and, when I do, I put on, at the moment of getting the reading, a very bored expression, and, while the air is sissling out of the cuff, sideswitch the train of thought by some such inquiry as "how are your bowels?"

Dr. Clarence L. Andrews, Atlantic City, N. J.: I merely wanted to emphasize the importance of not treating these cases of blood pressure as such. Dr. Christian emphasized also what I wanted to bring out. Those of us who practice in places like Atlantic City, who have friends out of the city who send patients to us solely for the purpose of having the high blood pressure cured, have to do something or lose our jobs. I try to divert the attention of my patient into some other line.

Blood Platelets.—The normal number of platelets in the blood may be taken as from 200,000 to 300,000 per cubic millimeter. The estimation of the number is subject to a large margin of error, and only large variations can be definitely recognized. It is, however, apparent that the number of circulating platelets is very susceptible to factors influencing them, and it may vary with great rapidity. It may be accepted that the function of the platelets is concerned with preventing the escape of blood from the vessels, and that in fulfilling this function platelets are withdrawn from and lost to the circulating blood. Hence in hemorrhagic conditions the number of platelets is influenced first by the group of factors already discussed, which affect the red and white cells, including the chronic and immediate extent of the hemorrhages, and the condition of the bone marrow and spleen; and by the withdrawal or consumption of platelets resulting from their attempts to check the hemorrhages. It has long been known that there is a marked decrease or even complete absence of platelets in cases of hemorrhage of the type of purpura hemorrhagica.—Tidy, H. L.: *Lancet*, Aug. 21, 1926.

THE FAMILY PHYSICIAN'S PLACE IN THE INSPECTION OF SCHOOL CHILDREN

WITH ESPECIAL REFERENCE TO THE RURAL SITUATION *

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RICHMOND, VA.

What is the ultimate aim, not the speculative ideal but the reasonable attainable goal, in the inspection of school children? Have we not the right to hope that some day virtually every child will be, as he has a right to be, made fit to enter school with a healthy body essential to normal development?

For endless generations, the schools have had to try to teach the physically unfit. Is it logical, is it reasonable, is it necessary, that this should be so? Cannot we find some plan for changing this condition, a plan that will appeal to all agencies interested in the child—to the home, to the school and to the church, but most of all to the physician, who, in the final analysis, must be the real factor in carrying out any such plan?

Necessarily, this paper will have to be somewhat discursive; but I will endeavor to show three things: first, that the present general method of caring for the health of school children is neither practical nor permanent; second, that it is possible to formulate a plan which will be both practical and permanent, and, third, that the family physician has a very definite place in such a plan.

A SURVEY OF MEDICAL INSPECTION IN THE UNITED STATES

To obtain an idea of this wide field, it may be well to give some facts that have been collected and published in the United States Public Health Bulletin 110. This bulletin is valuable in that it gives an outline of what is required and also what is overlooked. It gives no facts relative to results; but, year by year, results are being demanded, and requirements not upheld by results are being subjected to the severest and most unfriendly scrutiny.

For my purpose in this paper, the tabulation under the heading "Extent and Character of Medical Examinations" is particularly interesting. It shows that medical examination of school children is specified in thirty-two states, the District of Columbia and Hawaii; and among these thirty-two states is Virginia. Now the fact is, as I shall show in more detail later, that Virginia does not specify a medical examination. I have already heard from directors in other states, and from their letters I feel safe in saying that a large number of the states so set forth as requiring medical examination do not require it. However, thirty-one states do designate who shall administer the law relating to the inspection or examination of children. Twelve states designate no central authority to administer the law; it is left to the enforcement of individual counties or cities.

Now, according to the bulletin, twenty-three states have inspection made by persons with medical training. In states in which there are a goodly number of full-time health officers, a supply large enough to guarantee a sufficiency of visits to each school and a sufficient stay at each visit, medical inspection or medical examination might conceivably succeed; but is this the most desirable method of securing results? Certainly it is not a desirable way for states with a sparsity of physicians and with an insufficiency of full-time health officers.

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* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

But why should a physician be expected to move his workshop to a lay workshop and there, either for pay or without pay, either with poor equipment or with none, be expected to prostitute a scientific knowledge and ability to an inefficient, unscientific, hasty, incorrect procedure called "medical" only because it is performed by a licensed physician? Every physician knows that the so-called medical examination as performed in the average school room is a delusion and a folly. It is not an examination. It is a bare inspection. Better than any one else, the physician knows how nearly it is worthless.

Having studied this public health bulletin, I naturally desired to find some nation-wide results of these varied laws, so I wrote to the commissioner of education asking for reports on state-wide activities under the child hygiene laws. This was the response:

> The Joint Committee on Health Problems in Education brought together in 1925 all the available statistics with regard to defective vision of school children. The state and city reports compiled total 4,997,183 examinations. [This is 20 per cent of the total number of children—approximately 20,000,000—in the United States.]
>
> So far as I know, there has been no compilation on so large a scale of data as to other defects. Of recent state-wide statistics you will be interested in those from New York of 595,206 (76.9 per cent of all school children) examined in 1924, a report of which you will find in the *American Journal of Public Health*, April, 1925, p. 305. You are, of course, familiar with the annual reports of the examinations made in the schools of Virginia. No other state-wide reports have reached this office.

I have received some reports from states and cities that have medical inspection, and these show a curious approach to unanimity. We see an increasing number of children inspected or examined, and, in some cases, of corrections made. But one wonders why a state or city should point apparently with pride to its large number of physically neglected or defective children. The cause for pride should be the annual decrease in the number of these handicapped children and in the increasing number of physically fit children. Intelligent educators in many parts of the world agree that one cannot possibly teach a child anything until the child has been put into the condition physically fit to receive the teaching. Why should a public school or other institution supported for the very definite purpose of educating the youth of the community have to lose time from its work to get its pupils made physically capable of receiving the instruction for which the taxpayer is paying?

If, in our state, we should not be able to show to our legislators when they meet that our school inspection has resulted in sending thousands of children to family physicians, to medical specialists or to dentists, and that corrections have followed such visits, I greatly fear that we would be unable to secure funds for the continuance of our work.

THE VIRGINIA PLAN

Since the letter from the commissioner of education mentioned above referred me to my own statistical report of the physical inspection of school children in Virginia, I can do no less than give a brief summary of that work since the final passage of the West law, in 1920.

This law has been jointly administered by the two state boards of health and education. It carries points relative to physical education (which I will not discuss here), and to the health of the children in the schoolroom, as follows:

> 1. The teachers shall be instructed in the fundamentals of safeguarding the health of their pupils by securing healthful environment, by control of defects, and by inculcating health habits.
> 2. The pupil shall receive an annual health inspection to determine his physical fitness.
> 3. Any physical defects thus brought to light shall be corrected and, since the logical person to encourage corrections is the public health nurse, it is proper that the employment of such auxiliaries to education should be aided by means of financial assistance to counties employing them.
> 4. The children shall receive health education and physical education as a part of their course of study.

At the time the law was enacted, several teacher-training schools offered courses in hygiene; but these courses did not include actual practice in physical inspection; consequently, few teachers followed any definite health program in the school curriculum, and few children received special attention in regard to their health.

One of the main features of the Virginia plan at present is requiring every teacher to make a physical inspection of every pupil at the beginning of every session and of every pupil who may enter school after it begins.

Table 1 shows how we differentiate between a physical inspection and a medical examination, and it will be noted that the inspection is to be made in the schoolroom and the medical examination at the physician's office.

TABLE 1.—*Differences Between Physical Inspection and Medical Examination of School Children*

Physical inspection in the schoolroom is made by nurses or teachers, who report only on the following:	Medical examination is made by a physician at his office to determine functional or organic defects of the following:	
Vision		
Hearing	Eyes	Nutrition
Mouth breathing	Ears	Glands
Teeth	Nose and throat	Heart
Skin eruption		Lungs
Posture	Mouth	Abdomen
Height	Skin	Kidneys
Weight	Back	Blood
Underweight	Feet	Nervous system

We do not allow ourselves to be satisfied with untrained intelligence as a requisite for this physical inspection. We train our teachers carefully to detect obvious defects, but charge them specifically to avoid diagnoses or suggestions of defects that are not obvious. They do, however, make every effort to induce parents to consult an oculist, a dentist or the family physician, as the case may indicate.

In 1921, the state board of health formulated a course in physical inspection and school hygiene embodying the requirements of the West law. This course was approved by the state board of education, which made it a necessary part of the training of all prospective teachers and a requirement for all teachers applying for certificates. The course covers the following points:

1. Physical defects and their control.
2. Communicable diseases and their control.

3. Health instruction, including personal hygiene and prevention of accidents.

4. Care of the school plant.

Five years were allowed (to Sept. 1, 1925) for all the teachers in Virginia to fulfil the requirements of the West law. During this time, approximately 3,000 teachers a year received instruction in how to safeguard the health of children in the schoolroom. This was secured through one of the following agencies in Virginia: colleges; summer school courses; extension courses of colleges; correspondence courses given by one college and by the state board of health.

Today all students preparing to be teachers in the institutions offering teacher training are receiving this course. At the end of the five year period, Sept. 1, 1925, it is safe to say that approximately 95 per cent of the 16,630 teachers in Virginia, both urban and rural, had either fulfilled or were in process of fulfilling the requirements of the West law, and many of the division superintendents had specified this point as a definite qualification for receiving appointments in the country schools.

We hold that the annual inspection of every child in the school is properly the work of the teacher; and we believe that the results in Virginia have justified our judgment. It is curious indeed how emphasis has changed in regard to this inspection. The first year emphasis was placed on the number of counties that had teachers making the inspection. This was interesting but inconclusive. The next year emphasis was laid on the number of children inspected. This was more interesting and less inconclusive. The third year, chief emphasis was laid on the number of defects found. Now we began to approach the time when we might hope for results.

A year ago we began to ask for the number of children having defects corrected, the number immunized against diphtheria and the number vaccinated. The report for the year is given in table 2.

TABLE 2.—*Report and Result of Examinations*

Number enrolled in schools	443,950
Number inspected	410,936
Number with defects	262,077
Number with one or more defeccts corrected	69,843
Number immunized against diphtheria	17,342
Number vaccinated against smallpox	42,441

The physical inspection work of the state is done in thirteen cities and thirty counties under the direction of nurses, and in seven cities and seventy counties by the teachers without supervision.

Today, the pride in the program is not in the individual work of the teacher, however important that may be, but in the completed cycle—defect found, parent interested, physician employed, defect corrected—then back goes the child to school physically fit to receive his education, an asset to his state instead of a liability.

A MINIMUM STANDARD FOR PHYSICAL FITNESS

We are aiming toward standards of physical fitness in Virginia. Twenty of our pediatricians participated in the formulation of a standard which, until we find something better, we have adopted. This is the standard:

1. Good nutrition. (*a*) Not more than 10 per cent below or 20 per cent above average weight for height and age. (*b*) Firm musculature and subcutaneous tissue. (*c*) Hemoglobin not below 75 (Tallqvist scale).
2. Eyes: 20/20 vision with no symptoms of eye strain or corrected to 20/20 vision, with glasses if necessary, and with no organic lesion which impairs function.
3. Accurate hearing, with no malformation or chronic diseases.
4. Free nasal passages. (*a*) Absence of mouth breathing.
5. Healthy throat. (*a*) If tonsils are infected or are the cause of other defects, they must be removed.
6. Clean teeth with corrected defects and corrected malocclusion.
7. No glandular disturbance, such as tuberculous adenitis and hypertrophied thyroid.
8. Fully compensating heart, with no organic lesion.
9. No disease of the lungs, such as tuberculosis, bronchitis or asthma.
10. No abnormal defect, as hernia, palpable spleen or enlarged liver.
11. No intestinal infestation, as parasites.
12. No major orthopedic defects: erect posture. (All minor orthopedic defects corrected, as flatfoot and postural curvatures.)
13. Skin and scalp free from parasitic and other infections or serious abnormalities.
14. Absence of organic or functional nervous disease.
15. Protection against smallpox, diphtheria and typhoid.

The pediatricians had two additional points in this standard. These necessitated genital examinations and mental tests. We did not consider it wise at the present time to include the former, and for the latter we were not adequately supplied with mental specialists.

Of course there are difficulties in the way of attaining this standard of physical fitness. Our trouble in Virginia, and possibly this is the trouble everywhere, is the difficulty of interesting parents and making them realize their responsibility for the health of their children. If the child is sick enough to go to bed, they at once summon a physician; but if the child is apparently well they never think of insuring the child's health. We have to drive that fact into their consciences. Thousands of parents have had this thought suggested to them through our lectures, bulletins, child welfare conferences, mothers' classes and the correspondence course for mothers which was established three years ago by the state board of health under the Sheppard-Towner act. Other agencies are assisting in parent education, approaching the subject from various angles. We are gradually overcoming this factor of inertia. We are creating interest in the essential place, the home; but I regret to say that the average family physician is not yet sufficiently awake to the situation. Many intelligent mothers, admitting the lack of medical supervision, say, "The doctor laughs at me and says I am a foolish mother for wanting him to examine my well child periodically."

I think it is universally admitted that from the point of view of his entire life, the first years of the child are the most important. As a twig is bent so is the tree inclined. Trifling tendencies in infancy may easily grow into hampering defects in later years. It is this realization of the value of early work with children that has made us include within our plan definite efforts to create better standards for the preschool child with the view of sending him into the classroom physically fully fit. So, necessarily, we solicit, or even entreat, the help of the family physician; for only through periodic medical examinations can we know with certainty whether there are defects to be corrected or no defects at all.

Except in the case of the very poor, the duty of making these examinations should not be the function of a public paid health official; it is the province of the family physician, who is obviously the person best qualified to take this place in the child welfare program. In Virginia, we want this place definitely held for him, and we do not wish him to waste his precious time in the schoolroom. We do not believe that it requires a medical education to give superficial tests of vision or hearing, to make casual inspections of the teeth, or to weigh and measure a child; these things can be done by the teacher; and if we did so believe, there would not be in many counties enough physicians available for this work alone. The more the parents are educated in our line of endeavor, the more they realize that trained teachers can make satisfactory inspections, and the more readily will they heed the teachers' suggestions to send their children to physicians for complete medical examination and for corrective work.

It is not neessary for me to state that the rural physician is fast disappearing. The hardships attending country practice, bad roads, no amusements, poor pay and slow collections—all these make him inclined toward city practice, gradually leaving the country with a distressingly insufficient number of competent physicians.

We want good medical men for our rural districts. We believe that the strength of the nation is in the country-grown boy and girl. We want to keep the country children well and strong. We want our schools, our public health officials, our parents and our medical practitioners to put their minds on a program to insure this, which can be done only by initiating in the home regular medical supervision. I call on the practitioners of the American Medical Association to help foster such a program and to study this new health movement that is sweeping from coast to coast and from Canada to the Gulf—all over the world, in fact.

At the session of the American Medical Association in Atlantic City last year, I heard one of the speakers give a schedule for periodic examinations which was, as well as I can remember, as follows:

From birth to 6 months, see a physician every month.

From 6 months to 2 years, see a physician every three months.

From 2 years to 20 years, see a physician every six months.

From 20 years to 40 years, see a physician every one year.

From 40 years to 60 years, see a physician every two years.

From 60 years to 80 years, see a physician every one year.

From 80 years to 100 years, see a physician every six months.

This is not accurately quoted, perhaps, but nearly enough to give the idea. Who is to give this medical service but the family physician? If he fails to give it to the mother who seeks it for her children, to whom will she go? With the continuance of the program in Virginia, in ten years an enlightened parenthood will be demanding this service of the family physician. How will he respond? Is he going to be ready?

The children of today are beginning to demand of their parents that their defects be corrected. The children of tomorrow will demand that their defects and diseases be prevented. It is therefore to the family physician that we turn for sympathetic cooperation in caring for the mother; in preventing sickness among infants and preschool children; in correcting any physical defects, and in maintaining the health of the school child.

Who enjoys to the greatest extent the affection and confidence of the family? Certainly at one time the family physician did. Has he allowed this priceless advantage to slip away from him? Partly, yes; entirely, no. What he has lost he can regain; and he can even add to the prestige that was his. It is a far more wonderful privilege that he has today than the one he had forty years ago. He can now prevent; he could then only cure. The torch is yours; hold it high!

ABSTRACT OF DISCUSSION

Dr. Winnie M. Sanger, Oklahoma City: Dr. Brydon's method, which we term the "Virginia plan," has been broadcast in our state for the last two years. Having been a medical inspector in the public schools or in the state university for nine years, I know that the teachers do not value the teachings of health that the medical examiners impart. I know, too, that as soon as health teaching is done by the teachers themselves and health is recognized as much a part of education as art, music and science, we shall have some appreciation of what physicians are trying to do. I have found that when teachers are in sympathy with this work, we get results. We have two or three concrete plans in Oklahoma that we use in the grading or rating of health. One is the sorority plan, especially popular with the "junior highs." After the medical inspection has been completed, those whose health is satisfactory are organized into a club, like a sorority, where each standard child takes a substandard pledge, "and thus becomes personally responsible for the condition of his health." We are "popularizing health" by this and other methods in Oklahoma schools.

Dr. H. I. Gosline, Dallas, Texas: Dallas has put on a health program which has been presented to the public in the words, "Program for Physical Inspection." That brings a certain train of difficulties. These difficulties arise from an organization known as the American Medical Liberty League which, so far as I can find out, is some kind of "anti" organization—antivaccination, antivivisection, anti-this and that organization. According to the statements of its representatives locally, it has secured permanent injunctions in a number of different states against the medical inspection of school children; and in Dallas it has just succeeded in getting a decision which amounts to a permanent injunction. An appeal has been made against this decision. The organization locally is known as the Public School Protective League. It seems to me that if that sort of thing is going on throughout the United States a word here might forewarn, and you know the result of being forewarned. I think that by saying we are teaching public health, or physical education, or something like that we might be able to do the same work and circumvent the "antis." I do not know whether the law in any state specifically states what is education and what is not. I do not know that the law in any state says that the three R's constitute education and that everything else is not education. Therefore, we might be within the law and still teach physical education, while from a technical standpoint physical inspection might be construed as being a misappropriation of taxpayers' money; but that is a stand on which these people are able to rest. Another point is how to "get it across." We have done it here partly through talking to the Parent-Teachers' Association, and out of that work I understand a part of the national Parent-Teachers' Association work has developed a preschool age study program in which these principles are studied. And over and above that come the education of the parent and the opinion of the parent to get behind the work, and, of course, if you do not have the opinion of the parent you cannot get very far. That has also led to a combination here between the preschool study groups of the Parent-Teachers' Association and the health committee of the Moth-

SUMMARY AND CONCLUSIONS

In my experience, congenital hypertrophic pyloric stenosis presents a well-nigh unmistakable picture: fulminating progression of the vomiting, constancy and clear definition of the epigastric peristaltic waves, and the almost invariable resistance to medical and dietary therapy leaving little room for conjecture. Palpation of pyloric tumor is in no wise essential to the diagnosis, and, conversely, does not establish it. Examination by the roentgen ray has aided us only as a means of corroboration.

I have yet to see an instance of the so-called mild hypertrophic pyloric stenosis. Nor have I obtained a cure of pyloric vomiting by medical and dietary means in any case in which the diagnosis of congenital hypertrophic pyloric stenosis was not open to serious question. In fact, comparison of the first and second series of cases quoted shows them to have little in common except that severe forceful vomiting occurred with constancy in both, and the latter group showed delayed pyloric passage of food to a degree.

My attitude toward the treatment of congenital hypertrophic pyloric stenosis is that surgical intervention should promptly follow the establishment of the diagnosis.

3717 Main Street.

ABSTRACT OF DISCUSSION

Dr. H. Leslie Moore, Dallas, Texas: This excellent presentation of the classic symptoms makes it easy for all of us to retain a mental picture of this clinical entity. With early diagnosis, prompt and intensive treatment with heavy doses of atropine, gastric lavage, thick cereal feedings, together with refeedings when vomiting occurs, administered by an experienced and persistent nurse, checked by daily visits of an experienced physician, it is safe and proper that these infants should be given a chance to escape an operation. For the last two years I have been following this method, and I believe I have reduced the number of operations by about 15 per cent over former years. This applies mostly to patients that were free from symptoms until after the third week. I have had two patients that vomited from birth. One was operated on at the fourth day, and the other at the fifth day; both were completely relieved and recovered. The hypertrophy occurred early in uterine life, and at birth there was a full grown tumor. Others begin late and are slow in developing. These are the cases that are occasionally amenable to treatment. If one is not experienced in this line of work, if one does not have a skilled nurse, if the patient cannot be seen frequently, if there has been a great loss in weight, by all means one should not delay operation a single day.

Dr. H. F. Helmholz, Rochester, Minn.: The two groups that Dr. Greer has pointed out, I would consider definitely the mild and the severe type of pyloric stenosis. It is very difficult to make a differential diagnosis of spasm or stenosis. The absence of peristaltic waves in the first group would make me hesitate about the diagnosis of pyloric obstruction, particularly as it was pointed out that the roentgen ray did not disclose much retention in the stomach. The fact that by means of thick cereal feeding and atropine one can successfully open up a pyloric tumor is important. We have had opportunities to see several postmortem specimens from patients dying years after successful treatment, and have seen the tumor still present with enlargement of the opening sufficient to allow the taking of solid food. On the other hand, the absence of a palpable tumor or absence of peristaltic wave does not mean that a tumor is not present. We have seen a case of this kind in which, in the presence of very marked vomiting, without peristalsis or palpable tumor, at operation a definite tumor was found. The differentiation into the two groups, as he has stated, is possible in a large percentage of the cases, but the line cannot be absolutely drawn. I would call attention to a group of five cases of very mild pyloric stenosis developing in the first ten days of life. These were seen in our obstetric service before the children left the hospital, with definite, large peristaltic waves. Yet in each one of these five cases the patient went on to rapid complete recovery with atropine and occasional cereal feeding. With regard to treatment, I would emphasize the use of a transfusion in preparing the group that is brought in in acute dehydration.

Dr. A. Aballi, Havana, Cuba: We have some cases that can be mistaken for pyloric stenosis. They are the children suffering from inherited syphilis. They commence vomiting from the first day of birth. Sometimes the babies have visible peristaltic movements and lose a great deal of weight. Those cases are classified by Marfan as maladie de vomissements habituals. Perhaps they are connected with meningeal irritation. These babies cry almost constantly (Sixto's sign), and are relieved by treatment of the etiologic condition. The symptoms disappear promptly on antisyphilitic treatment. Other cases of early vomiting belong to the condition known as congenital dilatation of the duodenum and are not pyloric stenosis. In our cases of pyloric stenosis, symptoms commenced after the third or fourth week of age.

Dr. F. W. Schlutz, Minneapolis: In the type of case that Dr. Greer described, with very severe vomiting and absence of palpable tumor, and occurring so early in life, I would emphasize the great importance of sufficient administration of water. To overlook this is extremely serious. These cases can be brought to fairly rapid recovery if sufficient regard is had for the administration of water by every conceivable route outside of the oral route. We resort commonly to the intraperitoneal route in these cases. The use of heavy atropine dosage, sometimes cocaine hydrochloride in small doses, is better, and the use of lactic acid milk usually gives good results. We have not resorted as commonly to the thick cereal feeding at that age as Dr. Greer apparently has done, and have had satisfactory results with the lactic acid feeding. I do feel that the greatest and most serious mistake that is commonly made is not having sufficient regard to the necessity of giving water early and frequently enough to these patients. They often recover quite rapidly. Although they appear serious at the time, they do not present the difficult feeding problem that does the true hypertrophic pyloric stenosis case.

Dr. A. J. Scott, Los Angeles: The point Dr. Greer brought out, and it should be emphasized, is that stenosis occurs before the end of the second month, and spasm cases occur after the second month. At least in the series of cases that we reported about a year ago, we found that this was the approximate dividing line. The roentgenogram shows a definite obstruction in stenosis with no food passing through even at the end of eighteen hours. The spasm patients will have at least two thirds of the food out of the stomach at the end of four hours. Clinically, the two conditions are similar; but there is a marked difference in the true stenosis cases, in which there is marked dehydration, if they have gone too long. In the spasm cases the dehydration is not so marked. The two conditions should be differentiated very carefully, because the stenosis is surgical and the spasm is a medical condition.

Dr. Jules M. Brady, St. Louis: One might gain the impression after listening to Dr. Greer's paper that it was an easy matter to distinguish between a spasm and true hypertrophic pyloric stenosis. As a matter of fact, it is not, and while I have been fortunate in not having the surgeon operate in any cases of spasm, I know of many cases in which erroneously the operation was performed. In my experience, the kind of case that is especially liable to confuse us is one in which there is a parenteral infection. Last winter we had an epidemic of parenteral infection in babies in the first fourteen days of life. It was an infection with very mild fever, one that might be explained by the lack of water. The vomiting was of the projectile type. Some of these cases were accompanied by diarrhea, and some were not. I endorse the value of the thick cereal feeding method of treating these cases. It is a good way to treat all cases which start out, until we are able to make correct diagnosis. There is one point, however, which I have learned from experience in several years, and that is that while the thick cereal (and the thicker it is the better) will stop the vomiting in many cases, in some babies the progress upward is so slow as to make one doubt the efficiency of treatment. I refer to the gain in weight. Dr. Schlutz' point, to get water into the baby, is excellent. Our method of attempting to get it by retention enemas and rectal enemas has frequently failed. One practical point I have learned is that after a few days of absolutely thick feeding, so thick that the food has to be shoved down with the spatula, and then thinning it out slightly, we are able to induce a gain in weight. Another point of importance is that frequently we get a loose bowel movement. We get diarrhea with thick feeding as first recommended by Dr. Sauer, the use of cream of wheat. I think that cream of wheat feeding is somewhat dangerous. I believe we ought to use a cereal that will not be so liable to undergo fermentation. I refer especially to brown flour.

Dr. F. P. Gengenbach, Denver: I should like to finish the sentence interrupted by the chairman when Dr. Helmholz was speaking by relating our own methods of preparing these cases. We always give them physiologic sodium chloride or Ringer's solution, preferably intraperitoneally. In very debilitated cases we use the blood transfusion which Dr. Helmholz was about to recommend. For all patients that are very anemic and have gone on for some time on lowered food, we always use the transfusion afterward. The point I want to bring out personally in the use of the transfusion is the method of matching the blood with that of the donor rather than depending simply on the typing. We found that there was much less reaction with matched blood than when we depended on typed blood.

Dr. L. V. Blanco, Buenos Aires, Argentina: We have had a few cases of pyloric stenosis in Buenos Aires. I had very good results with treatment. I agree with Dr. Helmholz that it is difficult to differentiate between pyloric hypertrophy and pyloric spasm. We have the waves in both cases. Before one resorts to surgery, one should try the medical treatment. I have had good results with that treatment. I do not agree with Dr. Aballi with regard to old cases of syphilis. I have seen many cases treated with antisyphilitic treatment, and I have treated the same cases with only dietetics and have gotten better results. I agree with Finkelstein that these cases are more of a neuropathic nature.

Dr. Frank C. Neff, Kansas City, Mo.: I wish to emphasize the point that Dr. Blanco made, and that is the general neuropathic nature of infants with so-called pylorospasm. Dr. Park White described this under the heading of gastro-enterospasm. In trying to separate pyloric spasm from true hypertrophic stenosis, the presence of increased muscle and nervous tone throughout the body is of great help in the diagnosis. The English waste little time in deciding about a surgical operation for pyloric tumor in infants. They believe that the breast feeding should not be interrupted more than one or two days, that the operation should be promptly done, and that the prognosis is much better when the infant can be put back immediately to the breast. I do not know why there is any need, if one has the patient in the hospital, of taking more than from one to three days in deciding what the treatment should be. One will be apt to get benefit from medical treatment in a short time if such is indicated. If not, the child is still an excellent surgical risk. One caution about the intraperitoneal injection for this or any other reason should be mentioned. I have seen two children with a failing circulation —in other words, the child in an extreme condition—in which not only was the fluid injected into the peritoneum absorbed from the cavity but water was extracted from the tissues, so that we had more fluid in the peritoneal cavity an hour later than we had put in.

Dr. David Greer, Houston, Texas: We must all realize that in different years, in short periods of time, we each one have different experiences with the same condition, and I appreciate the benefit of theirs. Their observation, of course, adds a great deal to the small experience and small series of cases I have reported. Be that as it may, I would still emphasize that my attitude would be that, Given a child with projectile vomiting, severe pain and epigastric peristalsis, with or without palpable tumor, if it did not quickly show improvement on the so-called medical treatment, preferably the thick cereals, fluids and atropine, operation should not be delayed. The only point I would take any exception to at all is the giving of fluids intraperitoneally during the course of one's trial of medical treatment in a case that might be pyloric stenosis. I would hardly think it advisable to inject anything into the peritoneal cavity when operation would possibly have to be resorted to.

Clinical Notes, Suggestions and New Instruments

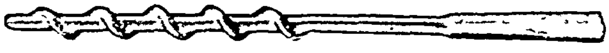
SPIRAL URETHRAL DILATOR

Oscar Hayes, M.D., Akron, Ohio

These spiral urethral dilators are made of steel that takes the finest polish and they are heavily nickel-plated and polished. They are made in sizes 16-24, 18-28, 20-32, 22-36, 24-40, 26-44, 28-44 and 30-46, and are 9¾ inches long.

They are numbered so that the first numeral represents the approximate metallic circumference, the French scale being used for numbering sounds. The last numeral represents the approximate diameter of the outside spiral circumference. The 20-32 size has the actual metal as in a number 20 F standard sound, and the outside diameter of the spiral is about the size of a number 32 F sound.

Spiral urethral dilators were designed for the purpose of milking and massaging infected follicles and lacunae of the urethra. The surprising ease of introduction into the urethra when strictures were present stimulated me to make several sizes to be used in dilating and massaging strictures.



Spiral urethral dilator.

ADVANTAGES OF SPIRAL URETHRAL DILATORS

1. They are easier to introduce and without the irritation due to the dragging friction of ordinary sounds.
2. They will actually empty infected follicles of their contents, as the pressure is distributed so that the follicular opening is unobstructed.
3. Strictures and granular patches are massaged by their action rather than being torn by the sudden dilation which frequently happens when ordinary sounds are used.
4. The posterior surface of a stricture where the most hyperemia is usually found can be massaged as well as the anterior surfaces.
5. Greater dilatation can be obtained through a small meatus.
6. The spirals of the dilators adapt themselves to the walls of the urethra as well as to the strictured bands.
7. There is little or no danger of pushing infection or pus farther into the urethra, as the spirals tend to bring such substances outward.

SUGGESTIONS IN THE APPLICATION OF SPIRAL URETHRAL DILATORS

Proper lubrication is important in introducing any instrument into the urethra. The canal should be properly lubricated as well as the instrument.

The size of instrument should be selected that will appear to fit the organ.

With the patient lying on his back and the organ held perpendicular, the dilator is introduced into the meatus, and by gentle rotary motion the dilator is started into the urethra. If the instrument meets resistance it is too large and a smaller one should be selected.

The instrument, if not too large, will worm its way without force down to the curve of the urethra. Then the handle is grasped and the dilator drawn outward without being allowed to rotate. Should there be too much resistance, the instrument is still too large.

The better results are obtained by a massaging action rather than tearing. When the spiral dilators are carefully operated there is practically no irritation.

MULTILOCULAR TUBO-OVARIAN CYSTS IN JUVENILES

William Lee Secor, M.D.,
Kerrville-on-the-Guadalupe, Texas

Large ovarian cysts are not of common occurrence in young girls. Up to 1905, only sixty-one ovarian cysts in children had been reported. Since that date thirty-eight more have been recorded.

Most of these were not very large, but a few were enormous. The most remarkable one was that reported by Keen[1] in 1893. It occurred in a girl, aged 15 years, from whom he removed a cystic ovarian tumor weighing 111 pounds (50 Kg.), and the fluid removed weighed 84 pounds (38 Kg.). The child weighed only 68 pounds (31 Kg.). Keen remarks that after the removal of the tumor the abdominal cavity looked almost like that of an eviscerated cadaver in the dissecting room. The child made a good recovery.

In 1921, Findley[2] reported a case of ovarian cyst in a girl, aged 15 years. The cyst was of the right ovary, was thin walled and multilocular, and weighed 32 pounds (14.5 Kg.). There was no twist of the pedicle and no evidence of a malignant condition. Six liters of bloody fluid was withdrawn from the tapped abdomen forty-eight hours before operation was performed.

In 1895, Walter[3] reported a case of a multilocular ovarian cyst in a girl, aged 13 years, the entire weight of the cyst, fluid and cyst itself being 13 pounds and 10 ounces (6 Kg.).

Reuben[4] has recently reported a case of a girl, aged 7½ years, from whom an ovarian cyst, the size of a grapefruit, was removed successfully. Another case reported by Reuben was that of a girl, aged 14 years, from whom a large cyst of the right ovary was removed. The pedicle was twisted twice.

Cystomas increase in frequency as age advances. Cyst of the ovary has been reported in a 7 months old fetus, one in a baby 15 weeks old and another in a child 3 months of age.

After searching the literature, however, it seemed evident that large multilocular cysts in young girls were sufficiently rare to justify the report of a case that recently came to operation at my hand. In fact, this tumor, which weighed 28 pounds and 6 ounces (about 13 Kg.), seems to be one of the very largest yet reported occurring in young girls.

REPORT OF CASE

S. M. was first seen by Dr. Isaac Mayhugh of Kerrville, Texas, June 1, 1926, and a diagnosis of large cystic tumor made. Dr. Mayhugh immediately referred the patient to me for surgical treatment.

The patient, admitted to the Kerrville Hospital under the Charles Schreiner Endowment, June 2, gave the age of 15. She was a slender, anemic, white girl complaining of no symptoms aside from abdominal pressure. There was little dyspnea.

The laboratory examinaton of the urine and blood were negative except for hemoglobin of 65 per cent. The stools were clay colored, and the patient's skin had a dull, pasty appearance. Physical examination disclosed no abnormality aside from an enormous abdomen with very tense walls and, on percussion, flatness throughout.

The girl gave the history of having first menstruated at 12½ years. The periods, at first regular, had been coming every two weeks for nearly a year. She had noted an enlargement of the abdomen for about one year. Eight months prior to her admission to the hospital the abdomen became very large but suddenly subsided so that she attended school, took a leading part in basketball games, and complained of no symptoms aside from increasing abdominal fulness.

June 3, I operated. A typical multilocular tubo-ovarian cyst of the left side was removed. The tumor seemed to fill the abdomen and pelvis. The intestine and liver were pressed so very tightly against the diaphragm that to the examining hand there appeared to be one solid smooth dome-shaped surface which felt very much like the under surface of the diaphragm. Individual loops of intestine and separate organs were not manifest. The pressure on the gallbladder and bile ducts was so great as to cause partial obstruction to the flow of bile, resulting in clay colored stools. After removal, the abdominal cavity looked like an eviscerated cadaver, as Dr. Keen noted in his remarkable case. Adhesions marked the site of the leakage some months before.

Gross examination of the tumor by Dr. Mayhugh and Louise Ross Lunn, R.N., showed a large, thick walled cyst composed of thirty-one separate and distinct locules, some filled with a heavy, clear, gelatinous fluid, some filled with thin, clear fluid, some with heavy, yellow, gelatinous fluid, others with a dark brown, thick but not gelatinous fluid, and one with thin, bright blood stained fluid.

The whole mass weighed 28 pounds and 6 ounces (about 13 Kg.). The solid portion weighed 10 pounds and 10 ounces (4.7 Kg.), and there were 9 quarts (8,600 cc.) of fluid.

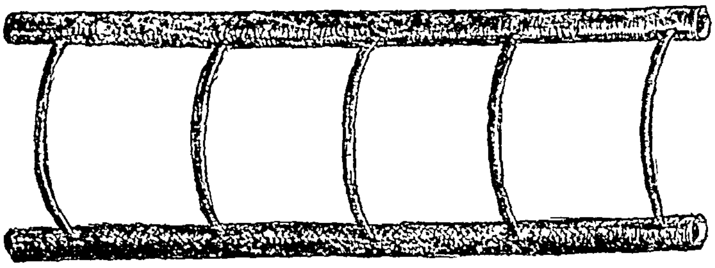
The patient had a perfectly smooth convalescence and was discharged from the hospital at the end of three weeks.

Dr. Mayhugh has been carrying out a line of endocrine therapy with her and reports that the patient is steadily gaining in weight and making a perfect recovery.

A NEW INSTRUMENT FOR CLOSING ABDOMINAL WOUNDS

A. H. Rosburg, M.D., San Francisco

This device is made of two brass rods and two or more (depending on the length of the ladder) cross wires or steps of the ladder. The entire device is nickeled. The rods, or uprights, of the ladder are from 2 to 12 inches long and three-eighths inch in diameter. The steps, or cross bars, are 2½ inches long, and slightly curved. The device does away with the heavy chromic catgut sutures usually placed in the anterior sheath of the rectus, and incidently with a lot of postoperative wound infections; it absolutely prevents cutting of the skin by the tension sutures; it compresses the tissues of the abdominal wall and thus does away with dead space.



Instrument for closing abdominal wounds.

The device is placed on the part to be incised, and with the back of the blade of the scalpel two parallel marks are made on the skin just lateral to the uprights of the ladder. It is then put aside and many marks are made on the skin across and at right angles to the two parallel markings. These should be about one-fourth inch apart.

The incision is then made midway between the two parallel markings.

After the peritoneum has been closed in the usual way, figure-of-eight tension sutures of silkworm, heavy dermal or linen are placed in the skin subcutaneous fat and anterior sheath of the rectus at the crossings of the skin markings made at the beginning of the operation. The skin is then sutured, the ladder replaced, and the tension sutures, which should be one-fourth inch apart or even closer, are tied not loosely but very tightly around the upright of the ladder. The usual dressings are used. The tension sutures with the ladder are removed two weeks after the operation.

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[1] Keen, W. W.: An Ovarian Tumor Weighing One Hundred and Eleven Pounds Removed from a Child of Fifteen Whose Weight was 68 Pounds, Coll. & Clin. Record. **14**: 142, 1893; M. Review **28**: 3, 1893.

[2] Findley, Palmer: Partial Rupture of an Ovarian Cyst Weighing Thirty-Two Pounds, with Great Loss of Blood in a Girl 15 Years of Age, J. Obst. & Gynec. Brit. Emp. **28**: 151, 1921.

[3] Walter, W.: A Case of Leakage of a Multilocular Ovarian Cyst in a Girl Aged Thirteen, Brit. Gynec. J. **11**: 51, 1895-1896.

[4] Reuben, M. S.: Torsion of Ovarian Cysts in Children, Arch. Pediat. **43**: 54 (Jan.) 1926.

I have used this method of closing abdominal wounds and have found it superior to the old methods. It does away with the heavy buried chromic catgut sutures for the anterior sheath of the rectus, which in my hands often caused late wound infections. It also gives one a chance to tie the tension sutures tight so that they really are of some use and yet not cut into the skin. This method is comfortable for the patient, as the sutures cannot cause pain by cutting into the skin.

REAPPEARANCE OF A POSITIVE DICK TEST *

John A. Toomey, M.D., Cleveland

Ferry[1] recently called attention to the reappearance of a positive Dick test in a patient who contracted measles.

About eighteen months ago, fifty-five nurses were divided into two groups, one of twenty, actively immunized against scarlet fever, and the remaining thirty-five, not protected, serving as a control series. All of the latter have subsequently developed scarlet fever, while nineteen of the twenty protected nurses have continued negative although frequently exposed to the disease. Fifteen of the nurses who developed scarlet fever developed redness at the site of the old Dick test. The longest interval between the reappearance of the redness with scarlet fever and the primary Dick test was one year, in two instances. All other nurses who had local redness had their scarlet fever within from two to three weeks after their test. In two instances, the redness occurred around the Dick test before the rash appeared, and in all cases this redness remained as long as the rash. In no instance did we see any blanching as described by Zingher.[2]

One of our patients had a positive Dick test and had a cross-infection of measles. As in Ferry's case, this patient developed redness at the site of the old Dick test. In another instance, a tuberculin test done four weeks previous became reddened again when the patient contracted measles.

It is possible that in these instances we are dealing with a modified Arthus phenomenon.

GANGRENE OF THE ARM AND DEATH FOLLOWING HYPODERMIC INJECTION

Marks M. Shaine, M.D., New York

As the result of the high pressure salesmanship methods of some pharmaceutic houses, the use of hypodermic and intravenous medication is growing by leaps and bounds. Some physicians have almost discarded prescription blanks, and their offices are veritable stock rooms filled with hundreds of ampules of various kinds.

That there is real danger in needle administration of drugs is proved by the cases of Tennant and of Doane mentioned by Fantus.[3] The case here to be described, which concerned a relative, is similar and warrants the warning not only to use the same strict asepsis in administering a hypodermic injection that one would use in a major operation, but also not to use hypodermic or intravenous medication except with those drugs which have little or no effect when administered by mouth.

M. L., a woman, aged 32, married, complained of weakness and lassitude. Her physician found a moderate anemia and advised a series of hypodermic injections of a preparation of arsenic. Twelve injections were given with apparently good effect. After a time the symptoms returned and a new course of injections was started. Thirty-six hours after the first injection in the second series, the patient complained of pain at the site of the injection in the left deltoid region, and noted a small area of redness. The redness and pain increased, and the temperature was between 101 and 104 F. A consultation was held at which a prominent dermatologist and a surgeon were present and a diagnosis of erysipelas was made. The redness continued to spread until it reached almost to the wrist. The fever continued high and the patient looked quite ill.

On the seventh and eighth days, large incisions were made in the arm and forearm; no pus pockets were found, but the tissue was necrotic and seropus oozed from the incision. On the ninth day the arm became gangrenous; high amputation was performed after a transfusion had been given. The patient died about two hours after the operation.

CONCLUSION

A hypodermic injection is a surgical procedure. Drugs should always be administered by the oral route except in those few cases in which the hypodermic method has been proved to give much better results. There is no proof that the arsenicals act better when given hypodermically than when given by mouth.

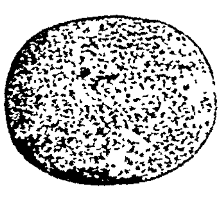
210 West Seventieth Street.

AN ANCIENT BLADDER STONE

G. D. Williams, M.D., Cambridge, Mass.

In the course of routine examination of an 18-year-old male mummy from one of the Basket Maker caves of northeastern Arizona, Mr. S. J. Guernsey of Peabody Museum, Harvard University, found among the articles associated with the burial an ovoid stone the size of a lime. Examination of the stone showed no perforation or other means for attaching it to the body or clothing as in case of an amulet or ornament.

The stone is symmetrically oval and measures: length, 42 mm.; breadth, 34 mm.; thickness, 27 mm. The weight is approximately 1 ounce troy, or 32 Gm. It has a somewhat chalky look and, like chalk, it leaves its white mark when rubbed on a hard surface. The surface is not smooth but has a shallow reticular pitting of a brownish hue which shows through the chalky white. The stone is soft and easily drilled.



Vesical calculus from mummy.

The field notes of the excavator, Mr. Guernsey, state that the stone was found "in the pelvis of the mummy." Mr. Guernsey and I suspected that the stone might be a vesical calculus, and submitted drillings of it to Dr. H. W. Starkweather, a chemist of Harvard University, who reports as follows: *Spectroscopic examination showed the presence of calcium. Dilute acetic acid gave a slight evolution of gas, indicating the presence of some carbonate. An acid solution gave a slight white precipitate with magnesium and ammonium chloride, indicating the presence of a phosphate. More than half of the material did not dissolve in dilute acetic acid. A small amount of the residue, heated on platinum, burned without flame, showing the presence of organic matter. Another portion subjected to the murexide test was positive for uric acid.*

The interest in this bladder stone lies in the antiquity of the stratum to which it belongs. According to Mr. Guernsey, the Basket Makers, so called from the fact that finely woven baskets are invariable mortuary offerings, are the most ancient human group in the Southwest of which we have knowledge. They antedate the Cliff Dwellers. How long ago they lived we cannot at this time be sure, but it is safe to say that the mummy in question is at least three thousand years old.

Peabody Museum.

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* From the Division of Contagious Diseases, Cleveland City Hospital, and the Department of Pediatrics, Western Reserve University School of Medicine.

[1] Ferry, N. S.: Reappearance of Reaction at Site of Previous Dick Test Coincident with Appearance of Measles Rash in a Case of Measles, J. A. M. A. 87:241 (July 24) 1926.

[2] Zingher, Abraham: The Dick Test in Normal Persons and in Acute and Convalescent Cases of Scarlet Fever, J. A. M. A. 83:432 (Aug. 9) 1924.

[3] Fantus, Bernard: The Technic of Medication, J. A. M. A. 87:170 (July 17) 1926.

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SATURDAY, SEPTEMBER 18, 1926

THE CLINICAL PHYSIOLOGY OF THE STOMACH

The constancy of various physiologic activities and the chemical uniformity of some of the body fluids under certain well defined conditions have been of considerable value to the practice of medicine. Thus the rate of the heart beat, when properly controlled, may become an index of normal function; variations in the composition of the blood from a certain fixity that is characteristic of health may betray the presence of pathologic conditions. The heat regulation of the organism ordinarily prevents more than small deviations of the body temperature from a well established "normal." The progress of clinical biochemistry has made it possible to measure the gastric functions by quantitative methods, and has awakened enthusiastic hopes of the value that the data secured will contribute to the diagnosis of alimentary abnormalities.

There are recurring indications that some of the earlier assumptions regarding the gastric juice may have been unduly rigorous. There was a time, not long since, when students of gastric physiology were taught that the acidity and volume of the secretion provoked by a "test meal" of a definite sort are fairly constant in character, and that the motor responses of the stomach to a digestive task of selected character are rather uniform. The accumulating wealth of measurements of these factors in persons presumably healthy or normal in function has not furnished the precise concordance of results that was anticipated. This is well illustrated by observations of Bloomfield and Keefer[1] at the Johns Hopkins Hospital. Using a standard gastric stimulus or "meal" in the form of 50 cc. of 7 per cent alcohol solution, they have noted wide variations in acidity as well as volume of the secretion provoked. The quantity of gastric juice secreted by persons without digestive symptoms varied between 9 and 69 cc. for a ten minute period, the closer range being from 10 to 30 cc. No relation was found between the volume of juice secreted and its acidity. The data are not as haphazard as might seem to be the case from this generalization; for although the volume of secretion and the degree of acidity vary within considerable limits in different persons, under the conditions of a constant test they are practically constant in the same person on repeated examinations. Motility, on the other hand, seems to vary greatly, and it bears no obvious relation to the other factors.

Gastro-enterologists have long recognized the existence of what are popularly designated by them as, respectively, rapidly emptying and slowly emptying stomachs in healthy persons. In view of such divergences, the Baltimore clinicians raise the question whether the terms hypernormal, normal, hyponormal and hyperacidity should be continued in use when they have clinical implications that do not appear altogether warranted. Perhaps the advice to speak simply of low, average or relatively high acidities is more in harmony with accumulating experience. At any rate, the gastric response of man should no longer be expected to manifest the extreme uniformity shown by some other bodily functions.

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[1] Bloomfield, A. L., and Keefer, C. S.: Clinical Physiology of the Stomach: Simultaneous Quantitative Observations on Gastric Secretory Volume, Acidity and Mobility, Arch. Int. Med. **38:** 145 (Aug.) 1926.

THE BLOOD IN THE LUNGS

The requirements of different parts of the body with respect to their oxygen supply, on the one hand, and the removal of metabolic débris, on the other, varies greatly from time to time. As the satisfaction of these needs depends primarily on the circulation, it is evident that excellent facilities for adjustment of the blood flow to them must be available. A recent writer[1] has indicated specifically what this may mean when a healthy person passes from a condition of bodily rest into heavy muscular activity. The delivery of blood by the left ventricle is augmented enormously, an increase of from 5 to 25 liters a minute being an ordinary result. He reminds us that a balance of blood vessel constrictions and dilatations accompanies this enhancement in output, shunting blood toward the working muscles. As Krogh and others have shown, the capillary bed in such contractile parts expands in area by the opening of closed vessels. Muscular work is thus accompanied by an enlargement of the surface for the diffusion of oxygen from the blood.

Evidently the lungs must keep pace with these changes, for during exercise the increased blood flow inevitably is also being pumped through the pulmonary circuit. The vascular changes, particularly in the lung capillaries, that permit a suitable adaptation to such large increments in the circulation within them, have not been clearly demonstrated. The requisite adjustment may conceivably be secured by active changes, as in the muscles, or by purely passive regulation. A recent investigation[1] at the Harvard University School of Public Health has failed to show any active variations of pronounced character in the caliber of the small pulmonary vessels under the influence of either shortage of oxygen or accumulation of carbon dioxide in the blood. It also seems improbable, in the opinion of these experimenters, that nervous regulation alters the size of the capillary pulmonary bed to meet the condition of the moment.

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[1] Drinker, C. K.; Churchill, E. D., and Ferry, R. M.: The Volume of Blood in the Heart and Lungs, Am. J. Physiol. **77:** 590 (Aug.) 1926.

According to the Harvard researches, increase in inflow into the right ventricle is the only means falling within ordinary normal experiences that results in increase of the pulmonary blood volume. Surplus routes of distribution are at hand. When the blood flow through the lungs is rapid and the pulmonary blood volume increases, all available channels are conducting blood and are somewhat distended. When flow falls and the pressure playing on different capillary paths is low, then only the easiest routes transmit the effective blood current, blood moves sluggishly through the more difficult, and the total pulmonary volume decreases. This is the picture of a truly passive regulation.

PHOSPHATEMIA

The modern applications of analytic chemistry to the study of the blood, whereby it has become possible to secure comparatively elaborate data from a small sample, already seem destined to rival the diagnostic advantages that have long accrued from microscopic investigations of the blood. The chemical components that remain in solution are beginning to tell their story to the competent examiner, just as the various types of formed elements have long been doing. Erythrocytes, leukocytes and bacteria no longer are the only features of immediate interest in the clinical study of the blood. Sugar and the various types of nitrogenous catabolites, such as urea, creatinine and uric acid, can be measured quantitatively with comparative ease. Each item thus established has some direct significance to him who is attempting to read the story of the body's physiologic deportment; and of late calcium, phosphorus and chlorine have become determinable with comparative facility for the same purpose.

Now that the biochemist has made his contribution, it becomes the duty of the clinician to avail himself of the knowledge and to attempt to apply it to his especial needs. Striking instances of the possibilities involved are afforded by the work of the late John Howland. As one of his biographers[1] pointed out, in infantile tetany Howland and Marriott showed that the calcium of the blood is diminished; and they made the treatment with calcium chloride a routine procedure. Howland's great contribution to the understanding of rickets, in which Kramer also participated, was the discovery that the disease is characterized by a diminution of the inorganic phosphorus of the blood. Previous investigators had thought of the malady as dependent on an abnormal metabolism of calcium. After Greenwald, in 1915, demonstrated an increase in the acid-soluble phosphorus of the blood of patients with nephritis, Marriott and Howland concluded that phosphate retention is the cause of nephritic acidosis.

The evidence is increasing to indicate that the content of phosphates in the blood gives valuable aid in making the prognosis in nephritis. A group of investigators[2] at the University of Toronto have also found the blood phosphates increased in at least two thirds of the nephritic children examined. They noted that the calcium and phosphates in the blood of nephritis bear an approximately reciprocal relationship to each other. High blood phosphates were usually found in patients with acidosis, but were also noted in children with no acidotic symptoms. A persistent moderate increase, particularly when transitory rises due to acidosis are excluded, indicates the presence of a progressive renal lesion. If the content of phosphorus reaches 7 mg. per hundred cubic centimeters, severe permanent harm is indicated; while values of 10 mg. are found when death impends. Phosphatemia thus becomes evidence of the functional impairment of the kidneys to excrete phosphates quite as well as merely a disturbed acid-base balance in the body. Retention is not necessarily accompanied by acidosis.

The Toronto investigations also seem to indicate that the nephritic kidney is functionally incapable of excreting calcium in a normal manner. This was evidenced by the low total excretion of calcium, and more strikingly by its decreased concentration in the urine. The calcium balance is apparently independent of the content of this element in the blood.

THE EMPTYING OF THE GALLBLADDER

As a result in particular of the pathologic manifestations for which it may become responsible in various ways, the gallbladder obtrudes itself frequently on the attention of the clinician. The function of this organ has remained obscure too long. The uncertainty has been accentuated by the striking circumstance that the gallbladder is always missing in certain species of the higher animals, whereas it is conspicuous as a part of the biliary tract of man. Consideration of its functions has involved questions of the storage of bile and also of the propulsion of the hepatic secretion toward the intestine. During recent years the marked concentration that the bile may undergo through sojourn in the gallbladder has become a demonstrated fact; and the knowledge of this reaction has helped to elucidate various features of pathogenic import.[3] The development of cholecystography, notably by Graham and his associates[4] in St. Louis, has greatly facilitated the insight into abnormalities of the gallbladder; but as a recent writer has remarked, despite the fact that the cholecystographic shadows that permit the roentgenologic visualization of the organ may persist for hours, depending on conditions, no one has reported observations of anything resembling a peristaltic action. If the gallbladder really is a contractile organ like the stomach, one would expect at times to secure evidence of motility by a method comparable with that which has contributed so much to an understanding of the contractile functions of the alimentary tract.

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[1] John Howland—1873-1926: Science 64: 80 (July 23) 1926.

[2] Boyd, G. I.; Courtney, A. M., and MacLachlan, I. F.: The Metabolism of Salts in Nephritis, I, Calcium and Phosphorus, Am. J. Dis. Child. 32: 29 (July) 1926.

[3] Functional Versus Mechanical Suppression of Bile, Current Comment, J. A. M. A. 85: 614 (Aug. 22) 1925; The Coloration of Subdural Blood Clots, ibid. 85: 1402 (Oct. 31) 1925.

[4] Graham, E. A.; Cole, W. H., and Copher, G. H.: Cholecystography, J. A. M. A. 84: 1175 (April 18) 1925.

The emptying of the gallbladder is not necessarily dependent on muscular forces. Like other hollow viscera of the body, it is elastic. A recent study by Kodama[5] in the department of surgery of the Washington University Medical School, St. Louis, indicates that the mechanical principle of elastic contraction is an important factor in the emptying of the gallbladder. It can easily be distended and it has an appreciable elastic recoil when the inside pressure is suddenly relieved. Kodama points out that, when the sphincter of Oddi at the ampullar end of the common bile duct is closed, the gallbladder is being constantly distended by the reception of bile. When, however, the intestinal end of the duct is suddenly opened, there is a sudden diminution of pressure within the gallbladder. Elastic recoil then occurs and bile is squirted through the cystic duct with considerable force. The discharge of bile from the gallbladder will continue until the pressures within the gallbladder and within the common duct have come to an equilibrium. Obviously, therefore, Kodama concludes, the gallbladder never empties itself completely at one time as it would if a peristaltic contraction occurred. Its contents, however, will gradually undergo dilution and change if a succession of openings and closings of the intestinal end of the duct occurs, because, after every closure of the sphincter, more liver bile will pour into the partially emptied gallbladder, which will again discharge some of its contents as soon as the sphincter reopens. In this way the gallbladder will be gradually washed out by the repeated opening and closing of the end of the common duct.

There are experimental evidences of the tenability of this view of discharge from the gallbladder as an elastic recoil from overdistention. If it is indeed correct, Kodama points out that a single application of a substance to the duodenum cannot be expected to empty the gallbladder, regardless of whether the material used is magnesium sulphate, as suggested by Lyon, or a more powerful stimulant to the flow of bile, such as fat has been reported to be.[6] In any event, some doubt is cast on the possibility of efficient drainage of the gallbladder by the Meltzer-Lyon method.

Current Comment

UNIVERSAL BAN ON HEROIN

The Interparliamentary Union will be called on at its meeting in 1927 to determine whether a universal ban shall or shall not be placed on diacetylmorphine (heroin), if a resolution that was adopted at the conference recently held in Geneva is effective. The conference, which assembled to arrange for the meeting of the union next year, adopted a resolution recommending for the consideration of the groups of the union the enactment of effective laws or regulations prohibiting the manufacture and distribution of heroin and requesting the Interparliamentary Bureau to transmit the resolution to the groups of the union and all the governments and parliaments of the world. The resolution was adopted on the initiative of Stephen G. Porter, chairman of the Committee on Foreign Affairs of the United States House of Representatives, one of the United States delegates to the conference. In support of it, Mr. Porter cited the action of the House of Delegates of the American Medical Association, in 1920, recommending that heroin be eliminated from all medicinal preparations and that its manufacture and sale in the United States be prohibited. He called attention, too, to the discontinuance of the use of the drug by the medical services of the United States Army, Navy and Veterans' Bureau, and by the Public Health Service. His investigations have convinced him that at least one third, perhaps one half, of the crimes of violence committed in the large cities of the United States by the so-called gunmen and others are committed by heroin addicts. The small dose and bulk of heroin facilitate smuggling and secret addiction. Importation of opium into the United States for manufacture into heroin has already been prohibited by law, and by a regulation of the Federal Narcotics Control Board, opium may not be imported to replace any derivative of opium that has been converted into heroin.

THE REACTION OF THE MECONIUM

The introduction of accurate methods of determining the true acidity, that is, the hydrogen ion concentration, of body fluids and tissues has made it possible to approach some of the biochemical problems of the organism in a more effective manner than was formerly feasible. As a consequence, our conception of the sequence of reactions in different parts of the alimentary tract under varying conditions has gradually been revised. The acid or alkaline reactions betrayed by such indicators as litmus have been found often to represent the actual acidity in a somewhat misleading way from the standpoint of current standards. The reaction of the feces varies considerably in response to different types of diets. This is notably true in infancy, when the hydrogen ion concentration may range from p_H 4.6, an acid response, to p_H 8.3, on the alkaline side. Such differences are accompanied by variations in the predominant type of micro-organisms in the intestinal flora. They also represent the usual divergences associated with unlike dietary conditions. Breast milk produces a characteristic acid reaction of the infant stools in contrast with the neutral or even alkaline reaction observed after a regimen in which cow's milk predominates. The question has consequently arisen as to whether the reaction determines the flora or vice versa. The meconium represents a condition of the alimentary tract when bacteria are excluded. The first measurements of its reaction, recently reported from the Yale University School of Medicine by Norton and Shohl,[1] indicate an average acidity of p_H 6.1. As the new-born infant begins to digest food, the acidity of the stools increases gradually during the first week to the reaction characteristic of breast-fed infants, or about p_H 4.9. According to these pediatricians, the meconium is closely analogous, both in chemical composition and in reaction, to the stools found in starvation. Therefore it seems highly probable to them that the initial reaction of the meconium and its gradual orderly change to that of breast-fed infants' stools are due primarily to the state of partial starvation at birth. As soon as the intake becomes adequate, the nutritional change is reflected in the fecal reaction.

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[5] Kodama, S.: A Model to Simulate the Mechanism of Emptying of the Gallbladder, Am. J. Physiol. **77:** 385 (July) 1926.

[6] Whitaker, L. R., and Milliken, G.: Surg. Gynec. Obst. **40:** 17 (Jan.), 646 (May) 1925.

THE MUSCULATURE AND MOVEMENTS OF THE ESOPHAGUS

The esophagus is a motile organ that affords unique interest in several respects. The upper portion is composed of striated muscle, in contrast to the smooth or unstriated variety that enters into the distal portion as it does throughout the rest of the alimentary tube. The different types of contractile tissue are presumably served by unlike modes of innervation. In view of these varied features it is to be expected that the upper and lower reaches of the gullet may exhibit somewhat differing pathologic manifestations, particularly so far as motility is concerned. It is a familiar physiologic observation that organs dependent on an extrinsic nerve supply cease their characteristic activity when the nerves are excluded. Muscles, whether striated or smooth, possess independent irritability and contractility. In the absence of stimuli through extrinsic nerves, however, only the smooth muscles seem to exhibit what may be termed automatic function. A recent writer has pointed out that this automatism may be so dominated by extrinsic nerves that it does not express itself; it remains subdued, as it were. When, however, the influence of the extrinsic nerves is removed, the automatism can exercise its powers. This has recently been demonstrated well in the case of the esophagus by investigations of Jurica[2] at the University of Chicago. Paralysis involving the entire esophagus follows immediately on double vagotomy; not on double splanchnectomy. Evidently, as Jurica points out, the vagi are of more importance than the splanchnics in the control of this organ. Presently the part composed of smooth musculature, with the local plexus of Auerbach, begins to act by itself after denervation. As in the case of the rest of the gastro-enteric tract, distention of the lower esophageal tube is an adequate stimulus to provoke coordinated contraction. The outcome of a denervated condition is interesting. Food swallowed into a vagotomized esophagus lodges in the upper part, forming an elongated column. By subsequent swallows this moves downward until it is forced into the beginning of what corresponds to the smooth musculature, whereupon peristaltic propulsion begins. It is an instance of the always striking correlation between structure, innervation, and function in the organism. One can thus better appreciate the possibility of unlike responses to pathologic processes in different parts of the esophageal tract.

Association News

THE WASHINGTON SESSION

Papers for the Section on Obstetrics, Gynecology and Abdominal Surgery

Dr. Carl Henry Davis, Goldsmith Building, Milwaukee, secretary of the Section on Obstetrics, Gynecology and Abdominal Surgery, requests that physicians who wish to appear on the program of that section at the session of the American Medical Association in Washington, D. C., May 16-20, 1927, submit titles to his office by November 1. The early date of the session necessitates an early completion of the program.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

ALASKA

No Smallpox in Alaska.—The U. S. Department of the Interior has just completed the distribution of smallpox vaccine and diphtheria toxin throughout the territory of Alaska. The territorial government and the bureau of education have cooperated in placing vaccine points in all towns in Alaska inhabited by white people for use in case of an epidemic; other steps also have been taken to prevent smallpox, which has been prevalent in Pacific Coast states extending to Alaska. There has been no smallpox in Alaska this summer.

COLORADO

State Medical Meeting.—The fifty-sixth annual meeting of the Colorado State Medical Society will be held at Colorado Springs, September 21-23, under the presidency of Dr. George A. Boyd. The house of delegates will meet Monday evening, September 20, at the city auditorium, where all the scientific meetings will be held also. A periodic health examination clinic will be held each morning and afternoon, and fresh pathologic specimens will be demonstrated by the state medical school and by officers from the U. S. Army General Hospital. The president's reception will be Tuesday, 9 p. m., at the Antlers Hotel, following a public meeting at the First Methodist Church, which will be addressed by Dr. Morris Fishbein, Chicago, editor of The Journal. Among the speakers at the scientific sessions will be Dr. Dean Lewis, Johns Hopkins University Medical School, Baltimore, "Bone Lesions—Their Diagnosis and Treatment"; Dr. Charles W. M. Poynter, Omaha, "The Lymphatic System as a Defense Mechanism"; Dr. Benjamin K. Hays, Fort Lyon, "Diagnostic Problems Peculiar to Veterans' Bureau Hospitals"; Dr. Franklin G. Ebaugh, Denver, "Treatment of General Paresis by Inoculation with Tertian Malaria"; Rev. Joseph F. Higgins, of the Colorado Hospital Association, "Why Advertise Charity?"; Dr. Harry Gauss, Denver, "Obesity—

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[1] Norton, R. C., and Shohl, A. T.: The Hydrogen Ion Concentration of the Stools of New-Born Infants, Am. J. Dis. Child. **32**: 183 (Aug.) 1926.

[2] Jurica, E. J.: Studies on the Motility of the Denervated Mammalian Esophagus, Am. J. Physiol. **77**: 371 (July) 1926.

Causes, Complications, Treatment," and Dr. Frederic A. Forney, Woodmen, "Treatment of Tuberculosis with Artificial Light."

CONNECTICUT

Five Die of Septic Sore Throat.—The outbreak of septic sore throat at Guilford, noted in The Journal, August 21, amounted to a total of 188 cases, 169 of which had, on August 15, been investigated by the state department of health; there had been five deaths at that time. Guilford was supplied with milk from four dairies and none of it was pasteurized. The outbreak of sore throat was attributed to milk from one of these dairies.

Personal.—Dr. Edward L. Kingman has been appointed health officer of Newtown.——Dr. Winthrop D. Scudder has been appointed health officer of East Hartford and South Windsor, to succeed the late Dr. Franklin H. Mayberry.——Dr. Howard W. Haggard, assistant professor of applied physiology at Yale University, has been appointed on the editorial board of the *Journal of Personnel Research*, succeeding Dr. Alice Hamilton of the Harvard Medical School, resigned.

Diphtheria Trends Downward.—In the first six months of 1926, there were fewer diphtheria cases in the state of Connecticut than in a corresponding period of any recent year. There were 1,135 cases of diphtheria reported to the state department of health in the first six months of 1915, 1,695 cases in 1920, and 1,674 in 1921, since which time there has been a gradual reduction in the number of cases, the most notable reduction being this year, when the number of cases was 760. Since 1920, there has been an increasing number of children immunized by means of toxin-antitoxin in the state. The state department of health states that the conclusion seems justified that the constant decline in diphtheria cases in Connecticut during the last few years is due in considerable measure to immunization with toxin-antitoxin.

FLORIDA

Former Eclectic Medical Examiner Arrested.—Dr. George A. Munch, Tampa, one time secretary of the Florida Eclectic Board of Examiners, was arrested by postoffice inspectors, September 4, it is reported, on charges of using the mails to defraud in the alleged sale of fraudulent medical diplomas. Dr. Munch is said to have "sold" diplomas presumably from defunct institutions and to have granted licenses to practice in Florida and elsewhere to persons not properly qualified, for fees ranging from $200 to $2,000. Dr. Munch, according to the *Federation Bulletin*, January, 1924, refused the demand of the governor to give up the records of the former eclectic board to investigators preparing to proceed against diploma mill physicians. Dr. Munch was appointed secretary of the board by Governor Catts when the latter removed the previous secretary, who was later reinstated, removed again, and Dr. Munch reappointed. The eclectic board was abolished in 1921. According to the Lakeland *Star Telegram*, the seized records of Dr. Munch contain information which is expected to lead to the discovery of many "quacks."

GEORGIA

Outbreak of Botulism.—A report from Waycross, September 4, stated that the city health department had announced the death of four persons in that city from botulism within the last thirty-six hours.

ILLINOIS

Two Die of "Milk Sick."—It was reported, September 7, that Cletus Watson and his wife, Ella, of Cowden, died within a few hours of each other of "milk sick," following an illness of only eight hours; James Mansfield died about two years ago on the same farm of "milk sick." The Journal published an article on white snake root poisoning, August 21.

Liquor Licenses Revoked.—The district prohibition administrator with headquarters in Chicago recently revoked the liquor licenses of the following physicians, it is reported, for the reason indicated:

Dr. Harry H. Davis, Rockford, failed to keep proper records, issued prescriptions unlawfully, submitted false and fraudulent reports.

Dr. Arthur C. McIntyre, Mendota, failed to keep proper records, sold unlawfully prescriptions for intoxicating liquor, issued prescriptions unlawfully.

Typhoid More Prevalent.—The state health director points out in his weekly bulletin that typhoid in Illinois is now six times more prevalent than it was in May, and twice as prevalent as it was a month ago; sixty-three cases were reported last week, the highest weekly incidence this year; 106 were reported in July and more than 200 cases in August. The average annual incidence of typhoid in Illinois is said to be about 2,000 cases, whereas twenty-five years ago the annual average was more than 20,000 cases.

Chicago

Annual Dinner.—The sixth annual dinner of the Chicago Medical Society will be held at the Hotel La Salle, Wednesday, October 13. The dinner will be informal and it is hoped that physicians and their families will bring their lay friends. There will be dancing in the Grand Ballroom and cards, and the speaker of the evening will be President Max Mason of the University of Chicago.

Award to Health Commissioner.—The Chicago *Daily News* awarded $1,000 to Dr. Herman N. Bundesen, city health commissioner, September 9, in accordance with an announcement made a year ago that such award would be made to that resident whom the *News* should adjudge to have "performed the most beautiful action or done the most beneficial thing for humanity." The work of Dr. Bundesen for the health of children, and in particular the pure milk campaign inaugurated this year, was considered as entitling him to the award.

Liquor Licenses Revoked.—The local district prohibition administrator recently issued orders revoking the liquor licenses of the following physicians, it is reported, for the reasons indicated:

Dr. Dean C. Brown, failed to keep proper records, issued prescriptions unlawfully, conspired to divert nonbeverage liquor to beverage purposes.

Dr. Arminda C. Fry, failed to keep proper records, issued prescriptions unlawfully, conspired to divert nonbeverage liquor to beverage purposes.

Dr. Joseph S. Hubert, failed to keep proper records, issued prescriptions unlawfully.

Dr. Wilbur V. Johnson, failed to keep proper records, issued prescriptions unlawfully, conspired to divert nonbeverage liquor to beverage purposes.

Dr. Yale N. Levinson, failed to keep proper records, issued prescriptions unlawfully, conspired to divert nonbeverage liquor to beverage purposes.

Dr. Otto P. Ludwig, failed to keep proper records, issued prescriptions unlawfully.

Dr. Arthur E. Price, failed to keep proper records, issued prescriptions unlawfully, conspired to divert nonbeverage liquor to beverage purposes.

Dr. David B. Rotman, failed to keep proper records, issued prescriptions unlawfully.

Dr. Edwin J. Smith, failed to keep proper records, issued prescriptions unlawfully, conspired to divert nonbeverage liquor to beverage purposes.

Dr. Rudolph Wagner, failed to keep proper records, issued prescriptions unlawfully.

Dr. Benjamin M. Wolin, failed to keep proper records, issued prescriptions unlawfully, knowingly diverted nonbeverage liquor to beverage purposes.

Promotions at Rush Medical College.—The board of trustees of the University of Chicago recently announced the following promotions in the faculty of Rush Medical College:

Dr. Thomas D. Allen, assistant clinical professor, department of ophthalmology.

Dr. Leo C. Clowes, clinical associate, department of medicine.

Dr. Herman P. Davidson, clinical instructor, department of ophthalmology.

Dr. Michael H. Ebert, clinical associate, department of dermatology.

Dr. James P. Fitzgerald, clinical instructor, department of ophthalmology.

Dr. Earle B. Fowler, assistant clinical professor, department of ophthalmology.

Dr. Richard C. Gamble, clinical associate, department of ophthalmology.

Dr. Elmer W. Hagens, clinical associate and Friedberg Fellowship, department of laryngology and otology.

Dr. Edwin F. Hirsch, assistant clinical professor, department of pathology.

Dr. Harry L. Huber, clinical instructor, department of medicine.

Dr. Harry J. Isaacs, clinical instructor, department of medicine.

Dr. George H. Jackson, Jr., clinical instructor and Senn Fellowship, department of surgery.

Dr. Fiske Jones, clinical instructor, department of obstetrics and gynecology.

Dr. Frank B. Kelly, clinical instructor, department of medicine.

Dr. Malcolm A. Kemper, clinical associate, department of medicine.

Dr. Grant H. Laing, clinical instructor, department of medicine.

Dr. Vernon M. Leech, clinical associate, department of ophthalmology.

Dr. Mabel M. Matthies, clinical instructor, department of medicine.

Dr. Harry A. Oberhelman, clinical instructor, department of surgery.

Dr. Evans W. Pernokis, clinical associate, department of medicine.

Dr. Sidney A. Portis, clinical instructor, department of medicine.

Dr. Richard B. Richter, clinical associate department of medicine (nervous diseases).

Dr. Mary G. Schroeder, clinical associate, department of medicine (neurology).

Dr. Howard M. Sheaff, clinical instructor and Dane Billings Memorial Fellowship, department of medicine.

Dr. LeRoy H. Sloan, clinical instructor, department of medicine.

Dr. George O. Solem, clinical instructor, department of medicine.

Dr. Aristoph Spare, clinical associate, department of ophthalmology.

Dr. Edward J. Stieglitz, clinical instructor, department of medicine.

Dr. Francis H. Straus, clinical instructor, department of surgery.

Dr. Ralph W. Trimmer, clinical instructor, department of medicine.

Dr. Emil G. Vrtiak, clinical instructor, department of medicine.

Dr. Alfred L. van Dellen, clinical associate, department of ophthalmology.

MARYLAND

Fewer Cases of Typhoid.—There were 130 cases of typhoid in Maryland in August, as compared with 217 in August, 1925; in the first eight months of this year, there was a total of 290 cases, and in the first eight months of 1925 there were 427.

Diphtheria Epidemic. — Eleven cases of diphtheria have developed in one block in Baltimore since September 7; cultures from the throats of all children in the block, made by the health department after the first case developed, disclosed seven carriers of diphtheria.

Personal.—Dr. John F. Hogan has resigned as director of the bureau of communicable diseases, Boston City Department of Health, effective January 1, to devote his time to private practice; Dr. Hogan has been connected with the Baltimore Department of Health for about thirteen years.

MASSACHUSETTS

Society News.—Dr. Thomas H. Halsted, professor of otolaryngology, University of Syracuse College of Medicine, addressed the Berkshire District Medical Society, Williamstown, August 5, on "Intracranial Complications of Otitis Media, Diagnosis and Treatment."

Personal.—Dr. Lewis F. Baker, superintendent, Burbank Hospital, Fitchburg, has been appointed superintendent of the Union Hospital, Fall River.——Dr. Joseph Muller has resigned from the resident staff of the Rutland State Sanatorium to engage in group practice; Dr. Muller is a graduate of the University of Budapest, Hungary.

MICHIGAN

Hospital News. — Mercywood Sanitarium, Ann Arbor, a branch of St. Joseph's Mercy Hospital for the treatment of nervous and mental diseases, was recently completed at a cost of $125,000; it will accommodate forty patients.

Dr. Ramsey Goes to Johns Hopkins.—After six years of service with the Michigan Department of Health, Dr. George H. Ramsey left Lansing, September 1, to become associate professor of epidemiology in the School of Hygiene and Public Health, Johns Hopkins University. Dr. Ramsey joined the department staff as clinician with the traveling tuberculosis clinic, later becoming director of the bureau of epidemiology and deputy commissioner of health.

State Medical Meeting.—The annual meeting of the Michigan State Medical Society was held at Lansing, September 14-16, under the presidency of Dr. Cyrenus G. Darling. Among the subjects discussed by the guests were "Some Advances in Ear, Nose and Throat Work," Dr. Harold M. Hays, New York; "Indications and Contraindications for Surgery of Duodenal Ulcer," Dr. Edward S. Judd, Rochester, Minn.; "Causes and Control of Uterine Hemorrhages," Dr. Channing W. Barrett, Chicago; "Blood Transfusions: Indications and Methods," Dr. Alfred A. Strauss, Chicago; "What Pathologic and Therapeutic Deduction Can Be Made from Hyperplasia of the Thyroid Gland," Dr. Claude E. Hoover, Cleveland; "Surgery of the Tuberculous," Dr. Irvin Abell, Louisville, Ky.; "Indications and Limitations of Deep Roentgen-Ray Therapy," Dr. Ursus V. Portmann, Cleveland; "Endoscopic Cases of General and Surgical Interest," Dr. William F. Moore, Philadelphia; "Focal Infections with Neurolabyrinthine Involvement," Dr. George W. MacKenzie, Philadelphia; "Ocular Equilibrium and Headpain," with lantern slides, Dr. Cyrus W. Rutherford, Indianapolis; "Cardiovascular System in Diseases of the Thyroid Gland"; Dr. Cyrus C. Sturgis, Boston; "The Span of Life," Dr. William A. Evans, Chicago, and "Liver Function Tests in Children," Dr. Samuel J. Levin formerly of New York.

MINNESOTA

Personal.—Dr. Stephen O. Watkins, formerly of Carlton, has been appointed resident physician of the new state tuberculosis sanatorium at Basin, Wyo.——Dr. Geza J. Kertesz, formerly of South Shore, S. D., has assumed charge of the Holman Hospital, Pine River.——Dr. Benjamin F. Simon, formerly city health officer of St. Paul, has been made chief of staff of the new Roosevelt Hospital in that city.

Society News. — At the annual meeting of the Northern Minnesota Medical Association, Crookston, in August. Dr. William W. Will, Bertha, was elected president; Dr. Joseph G. Millspaugh, Little Falls, vice president, and Dr. Frank J. Hirschboeck, Duluth, secretary-treasurer.——The Taxpayers Association of Hennepin County has made a protest against the largely increased number of cases admitted free to the county hospitals, according to the *Journal-Lancet.*——The Meeker and Stearns County Medical Society held a joint picnic at Annandale in August.——Dr. Henry L. Ulrich delivered the presidential address before the Minnesota Academy of Medicine, Minneapolis, September 15, on "Some Aspects of Hypertension."

NEVADA

State Medical Meeting.—The twenty-third annual meeting of the Nevada State Medical Association will be held at Reno, September 24-25, with headquarters at the Hotel Golden, under the presidency of Dr. Arthur J. Hood; the annual banquet will be Saturday evening. Dr. James Edward Harbinson, Woodland, Calif., will address the meeting on "Joint Pains and Uric Acid Diathesis"; Dr. Miley B. Wesson, San Francisco, on "Treatment of Malignant Tumors of the Testicle and Scrotum"; Dr. Ernest H. Falconer, San Francisco, "Blood Transfusions in Pernicious Anemia"; Drs. Philip King Brown and Leo Eloesser, San Francisco, "Symposium on Lung Compression and Surgery"; Dr. Ludwig A. Emge, San Francisco, "The Menopause and Its Treatment"; Dr. Howard E. Ruggles, San Francisco, "Cholecystography"; Dr. Clain F. Gelston, San Francisco, "Acute and Chronic Upper Respiratory Tract Infections in Children"; Dr. Edgar L. Gilcreest, San Francisco, "Study of Fractures in and About the Ankle Joint"; Dr. James F. Percy, Los Angeles, "Cautery Treatment of Carcinoma Above the Clavicle"; Dr. Howard C. Naffziger, San Francisco, "Treatment of Spinal Cord Injuries"; Dr. William W. Washburn, San Francisco, "Diagnostic Problems of Surgical Lesions of the Abdomen," and Dr. Hans Lisser, Berkeley, Calif., "Influence of the Thyroid, Pituitary and Suprarenal Gland on Functions of the Ovary."

NEW JERSEY

Hospital News.—The Paterson General Hospital, Paterson, recently opened a new $75,000 Walter B. Johnson Memorial wing.——The new West Hudson Hospital, Arlington, erected at a cost of $175,000, was opened, September 15.——The New Jersey State Firemen's Home, Boonton, has recently completed a $35,000 hospital.

Health at Newark.—Telegraphic reports to the U. S. Department of Commerce for the week, ending September 4, from sixty-five cities with a total population of about 29,000,000 indicate that the lowest death rate (6.9) was for Newark, and that the rate for the group of cities as a whole was 10.9. The death rate for Newark for the corresponding week last year was 9.3, and for the group of cities, 11.2.

Dr. Bolton Honored.—A reception was held at the Essex County Hospital, Cedar Grove, September 1, in honor of Dr. and Mrs. Robert Bolton, on which day Dr. Bolton retired from the position of first assistant physician, which he had held in that hospital for thirty-three years. The honored guests were presented with a large radio receiving set. Dr. Bolton graduated from the Columbia School of Mines and New York University Medical College. He will retire to a small farm in Patchogue, L. I.

Unlicensed Practitioners Fined. — During July, the state medical board and the state board of pharmacy entered complaints against five persons in Monmouth County for practicing medicine and selling drugs without a license. Mrs. Sophie Reale, Long Branch, was fined $200 for practicing medicine without a license; Henry Herman, West End, was fined $100 for permitting the sale of drugs in his store by an unlicensed person, and William Fogelson was fined the same amount for selling drugs without a license. Joseph Sugarman and Rae Cohen, Asbury Park, were each fined $100 for selling drugs without a license.

NEW YORK

Third District Branch Meeting. — The twentieth annual meeting of the Third District Branch of the Medical Society of the State of New York will be held at the Marmanus Bleecker Library, Albany, September 25, under the presidency of Dr. Charles P. McCabe, Greenville. The Albany County Medical Society invites members of the Third District Branch and their wives to its annual clam bake at McKown's Grove at 5 o'clock (tickets, $5); transportation will be provided if requested. Dr. Haven Emerson, New York, will address the Branch meeting on "Periodic Health Examinations"; Dr. Henry J. Noerling, Valatie, on "Postgraduate Education," and Dr. William P. Howard, Albany, will conduct a roentgen-ray conference; among other speakers will be Drs. George M. Fisher, Utica; James E. Sadlier, Poughkeepsie, president and president-elect of the state medical society, respectively, and Drs. Daniel S. Dougherty, New York, and Joseph S. Lawrence, Albany, secretary and executive officer, respectively, of the state medical society.

New York City

Health Commissioner Starts Another Investigation.—The city health commissioner began an investigation, September 7, of reports that some inspectors of the health department had been exacting graft from proprietors of restaurants. The complaints received indicate, it is reported, that several thousand restaurant and lunchroom owners in the city have been submitting to demands for graft of minor health department officials to the extent of from $2 to $5 each week in order to permit them to violate the health code in the handling of food.

Workshop for Nervous Girls.—The Vocational Adjustment Bureau, 360 East Nineteenth Street, reopened the workshop for nervous girls, September 14. A report on the therapeutic and industrial experiment being conducted will soon be available. Girls having borderline mental disability may be sent here free of charge for vocational study and training. Among the physicians on the advisory board of the Vocational Adjustment Bureau are Drs. Edward R. Stitt and Frankwood E. Williams, Sanger Brown II, Ira S. Wile and Louis Berman.

Lutheran Hospital to Move.—A block of land at One Hundred and Eighty-Seventh Street and Bennett Avenue has been purchased by the Lutheran Hospital, Manhattan, for the erection of a hospital building, the first unit of which will cost about $1,000,000 and accommodate 200 patients. An appeal will be made to the public for $750,000 this fall. The present Lutheran Hospital, at Convent Avenue and One Hundred and Forty-Fourth Street, has 117 beds and, although founded by Lutherans, serves all creeds and races. One tenth of its work is said to have been for charity, the public paying the cost by voluntary contributions; among the directors of the hospital are Drs. Frank Grauer, John Leshure, William H. Luckett and Franklin Welker.

Columbia Extends Public Health Work.—The DeLamar Institute of Public Health of Columbia University will award the degrees of master of science and doctor of philosophy beginning with the coming year, the awards being subject to the same requirements as are in force in other departments of the university. Columbia's object is to extend to the public through channels of public education the benefits of reliable information in the protection of human health and the prevention of disease. This accords with the will of Joseph D. DeLamar, under which funds were provided for the institute. Dr. Haven Emerson, the director, is reported to have said that the staff of the Institute of Public Health is now authorized to train sanitarians, health officers, directors of medical services of industrial plants, vital statisticians and others who wish to qualify in a postgraduate school. The institute is a part of Columbia University School of Medicine.

Society News.—The Physician's Square Club of Greater New York visited Philadelphia, August 18, to initiate the newly organized club of that city; the annual convention of the Physician's Square Clubs of America will be held in Philadelphia the last week in September.——The Cambridge (England) University Medical Society, on its tour of medical centers, attended a ball game, September 4, between the New York Giants and Boston Braves at the Polo Grounds, and visited the Rockefeller Institute for Medical Research, the College of Physicians and Surgeons and the new Medical Center, which is being erected at One Hundred and Sixty-Eighth Street and Broadway; they left for New Haven, September 6.——The Women's Medical Association of New York City will meet on the second Wednesday in October instead of the third, as previously announced at the New York Academy of Medicine, 17 West Forty-Third Street. Dr. Connie M. Guion will speak on "Cardiac Therapy," and Dr. Ada C. Reid on "Electrocardiography"; cases will be shown from 8 to 8:30.

NORTH CAROLINA

Hospital News.—Dr. W. S. Rankin addressed the Rowan County Medical Society at a barbecue meeting, September 3, on "The Benefits of County Hospitals"; Rowan County will vote at an election soon on a bond issue for the establishment of a county hospital.——The Caldwell Hospital, Lenoir, was formally opened, September 3; the staff includes Drs. R. W. Petrie, L. A. Crowell, J. D. Rudisill and M. T. Mitchell.

Physicians Volunteer Aid in Rehabilitation Work.—The supervisor of rehabilitation in North Carolina, H. L. Stanton, has submitted a report to the federal board for vocational education stating that rehabilitation work has been retarded in North Carolina on account of the lack of the facilities of a state hospital such as are found in many states, or other provisions for treatment and the correction of deformities. A plan of procedure was submitted, however, to the orthopedic surgeons at their recent state meeting whereby the state was to be divided into seven zones and a surgeon placed in charge of each for the purpose of holding clinics monthly, the place to be determined by the surgeon of the rehabilitation service. According to the *U. S. Daily*, the surgeons unanimously agreed to accept this plan, and at the close of the fiscal year eleven clinics were being held monthly throughout the state. The results accomplished in this short time amounted to the examination of 1,024 cripples, of whom 140 were 16 years of age or more; the treatment of 327 patients, of whom 122 were 16 years of age or more; thirty-eight orthopedic operations had been performed and prosthetic appliances fitted in fifty-seven cases. The vocational handicap in some of these cases has been entirely removed through orthopedic treatment and diminished in others. The physicians assisting in this work examined without charge all patients attending the clinics, and treated without charge all indigent cases through the application of plaster casts, braces and orthopedic shoes, and by corrective exercises at the clinic. They also gave their service free to those patients requiring operations in hospitals. The expenses of the clinics are borne by such organizations as the Rotary, Kiwanis and Lions clubs, and hospital beds are provided by hospitals and civic organizations.

OHIO

Typhoid Epidemic.—An outbreak of typhoid was reported from Wellington, September 10, which amounted then to eighty-three cases and two deaths; fifteen new cases had been reported within the last forty-eight hours.

Member Wills Half of Estate to County Society.—The late Dr. John L. Washburn, Youngstown, provided in his will that, on the death of his wife, one half of his estate shall be turned over to the Mahoning County Medical Society for a new home. The estate has been probated and estimated at $100,000. The state medical journal asks, "What greater thing, what nobler thing could a man do than provide something of this kind for the profession he loved and for the profession that loved him?"

Report of Committee on Penitentiary.—A committee of eight Columbus physicians, appointed by the governor months ago to investigate and make recommendations about health conditions in the state penitentiary, has submitted its report. Among the committee's recommendations were (1) complete overhauling of the plumbing and lighting system; (2) construction of an additional sanitary cell block properly ventilated and with plenty of sunlight; (3) replacement of the two old cell blocks with new ones or overhauling the old ones and supplying the necessary sanitary facilities, and (4) increase in medical staff, so that a physician can be detailed to examine and note any physical or mental defect of prisoners when received.

Association Enlarges Headquarters.—A special committee, appointed by the president of the Ohio State Medical Association, has completed an agreement whereby the headquarters occupied by the association for the last ten years will be leased for a term of five years and enlarged. Under the new arrangements, the headquarters now comprise a room for meetings of the council and committees, three offices and a mail and storage room. The details of the arrangement as well as of the equipment were worked out by the committee, and they anticipate demands that may arise for increased activities. The enlarged quarters, which have already been occupied, are on the third floor of the Physician's Building, 131 East State Street, Columbus; members are urged to visit the office when passing through Columbus.

Postgraduate Work in Second Councilor District.—The annual postgraduate course of the Second Councilor District Medical Society will be held at Dayton, September 27-October 1; the fee for the course will be $10, and luncheon will be served free to members at the Miami Hotel. The guests include Dr. Dean Lewis, professor of surgery, Johns

Hopkins University, Baltimore; Dr. Henry F. Helmholz, Mayo Clinic, Rochester, Minn.; Maud Slye, University of Chicago; Dr. Charles P. Emerson, Indianapolis; Dr. Irvin Abell, Louisville, Ky.; Dr. Charles F. Hoover, Cleveland; Dr. Stewart R. Roberts, Atlanta, Ga., and Dr. Paul H. Ringer, Asheville, N. C.; subjects of interest to general practitioners and specialists will be discussed. The secretary of the Second Councilor District Medical Society is Dr. Arthur O. Peters, Dayton.

County Society News.—Dr. Joseph C. Placak, Cleveland City Hospital, Cleveland, addressed the Geauga County Medical Society, Burton, recently, on "Tuberculosis."——The Tri-County Medical Society—Mercer, Van Wert and Paulding—was addressed recently at the Willow Bend Country Club, Van Wert, by Dr. Lloyd M. Otis, Celina, on "Diathermy in Bone and Chest Diseases," and by Dr. Clarence E. Huston, Paulding, on "Medical Inspection of Rural Schools."——Stark County Medical Society held its annual outing at Congress Lake, July 20; there was boating, golf, cards and an address by Judge Charles Kreichbaum, Canton; more than 100 persons were in attendance.——Dr. Milton B. Cohen, Cleveland, addressed the Richland County Medical Society, Mansfield, recently, on "Diagnosis of Jaundice" and "Recent Advances of Allergy."

PENNSYLVANIA

Personal.—Dr. Christian Gruhler has been reelected president of the board of health of Shenandoah.——Dr. Frederick A. Rupp, Lewistown, is a candidate for Congress from the Eighteenth Congressional District.——Dr. J. Howard Swick, Beaver Falls, has been nominated on the Republican ticket for representative to Congress.

Hospital News.—The Good Samaritan Hospital, Lebanon, will soon construct an addition costing about $150,000.——A drive was opened for $250,000, August 20, for a new Quakertown hospital at Quakertown.——The New Reading Hospital, Reading, will be opened, October 2, when the building and equipment may be inspected.——The directors of St. Joseph's Hospital, Carbondale, announced that a new 100 bed hospital would be built at a cost of more than $250,000.

Society News.—Dr. William E. Robertson, Philadelphia, addressed the Lancaster City and County Medical Society, September 1.——The McKean County Tuberculosis Society examined 110 persons recently at clinics held at Port Allegheny, among whom were found five active cases of tuberculosis, it is reported, and ten arrested cases.——Dr. Harry M. Stewart, Johnstown, addressed the Cambria County Medical Society, August 12, on "Diagnosis of Gallbladder Disease."——Dr. Michael A. Burns, associate in nervous and mental diseases, Jefferson Medical College, addressed the September meeting of the Berks County Medical Society, Reading, on "The Mental Hygiene Movement in Pennsylvania."

Health Department Motorized Units. — The state health department's bureau of engineering reports that the motorized laboratories engaged in the highway water supply work have examined nearly 2,000 supplies, more than one half of which were rejected. The department, in view of the large number of rejections, advises the traveling public to drink only from supplies marked with the safe water placard and thus avoid the possibility of contracting typhoid.——Two motorized milk laboratories, under the direction of the state health department, are making an investigation in Allegheny County of pasteurizing plants and farms where raw milk is sold direct to consumers; this involves the rural sections and ninety-nine separate municipalities.——The state health department's motorized health car which has been operating in Fulton, Venango, Centre and Bradford counties completed its work the first week of September. Its staff, three physicians, two dental hygienists and two nurses, since June 1, examined 4,250 children in the rural communities; the staff included Dr. Rose S. Reis, Dr. Faith J. Fairfield, Dr. George B. Faries, Miss Mary Tully and Miss Mary Willis, dental hygienists.

Philadelphia

Society News.—Dr. Carey J. Vaux, director of public health of Pittsburgh, will address the Philadelphia County Medical Society, September 22, on "Pneumonia Quarantine"; a dinner in honor of Dr. Vaux will be given preceding the meeting.

Dr. Smith Honored.—Dr. Edgar Fahs Smith, former provost of the University of Pennsylvania, was presented the Joseph Priestley Medal by the American Chemical Society, in session at the Bellevue-Stratford, September 6-10, and was also honored with renewal of a Ph.D. degree presented fifty years ago by the University of Goettingen, Germany.

SOUTH CAROLINA

Personal.—Dr. William Atmar Smith was recently appointed chairman of the board of health and welfare of Charleston.——Dr. William G. Bodie, Wagener, has been appointed health officer for Aiken County.

Society News.—The Chester County and Union County medical societies held a joint meeting at Lockhart, recently, and were addressed by Dr. William R. Wallace, Chester, on "Crawford W. Long"; by Dr. Arthur P. McElroy, Union, on "Surgical Shock," and by Dr. William J. Henry, Chester, on "Vincent's Angina."

TENNESSEE

Explosive Epidemic.—It was reported, September 9, that nearly 200 residents of Dyersburg were confined to their homes as the result of an outbreak of suspected "milk poisoning," and that many of them had been "violently" ill since the preceding Sunday. Pending an investigation by health official, a dairy was restrained from further delivery of milk.

WASHINGTON

Hospital News.—The new forty bed Centralia General Hospital, Centralia, was opened in July.——The Seattle Swedish Hospital Association has purchased a site at Marion Street and Minor Avenue for a 100 bed addition to the hospital.——Clallam County will vote in November on a bond issue for a city-county hospital.

Society News.—Dr. Willis C. Campbell addressed the annual meeting of the Seattle Orthopedic Society, September 10-11; the King County Medical Society held a special joint meeting with the Seattle Orthopedic Society, September 10, and was addressed by Dr. Campbell on "Treatment of Post Traumatic Conditions and Complications."——The annual golf tournament of physicians and dentists was held at the New Inglewood Golf Club House, August 26; the dentists won, 36 to 37; 150 members of these professions attended the banquet in the evening, and the success of this occasion assures the establishment of an annual medical-dental golf match. Twenty-three different firms in the city presented prizes for this occasion.——Dr. Frederick A. Slyfield addressed the King County Medical Society, September 13, on "General Routine Care of the Tuberculous Patient"; there was a symposium on such special forms of treatment of pulmonary tuberculosis as heliotherapy (Dr. John M. Henderson), pneumothorax (Dr. Charles R. Castlen), tuberculin (Dr. Walter S. Griswold), and thoracoplasty (Dr. Philipp Schonwald).

WEST VIRGINIA

Personal.—Dr. Hugh Dunn has been elected president of the board of education of Richwood.——Dr. Mortimer D. Cure has resigned as health officer of Lewis County and been appointed superintendent of the Weston State Hospital.——Dr. John Thames, Little Rock, Ark., recently appointed Kanawha County health officer, took up his new duties, September 1.——Dr. John W. Niedermeyer has been appointed city health officer of Benwood.——Drs. Frank LeMoyne Hupp and Robert J. Reed, Wheeling, received the honorary degree of doctor of science from Washington and Jefferson College at the commencement in June.

County Society News.—About eighty physicians attended a meeting of the Fayette County Medical Society, Oak Hill Hospital, August 10, as guests of Drs. John H. McCulloch and Albert U. Tieche, proprietors of the hospital; Dr. Claude C. Coleman, Richmond, Va., addressed the meeting on "Brain Tumors"; Dr. Walter E. Vest, Huntington, "Pericarditis with Effusion," and Dr. Ray M. Bobbitt, Huntington, on "Ureteral Obstruction." This was considered by the state medical journal as one of the society's best meetings.——The Kanawha Medical Society, embracing Boone, Clay and Kanawha counties, met at the Hotel Kanawha, Charleston, September 7, and was addressed by Dr. Edwin P. Sloan, Bloomington, Ill., on "Surgical Aspects of Goiter."——Dr. Charles L. Parks addressed the Marion County Medical Society in July on "Hypertension," and Dr. Carl J. Carter on "Obstetrics"; the society is planning to hold one meeting a year in Fairview, Mannington, Farmington, Monongah and Worthington, and is making an effort to stimulate its own members to give the addresses at the stated meetings——Mercer County Medical Society invited the McDowell County Medical Society to join them in a picnic at Shawnee Lake in August; David B. Lepper, city health officer of Bluefield, addressed the society recently on "The Health Department's Preventive Health Program."

CANADA

Dr. Halpenny Goes to Texas.—Dr. Jasper Halpenny, formerly professor of surgery, Faculty of Medicine of the University of Manitoba, has gone to Texas on account of ill health to engage in fruit farming. Before his departure, an address and a gift were presented to Dr. Halpenny by various medical organizations.

Professor Nicholls Resigns.—Dr. Albert G. Nicholls, for about twelve years professor of pathology and bacteriology, Dalhousie University, Halifax, and pathologist to the Province of Nova Scotia and director of provincial public health laboratories, recently resigned these positions. Dr. Nicholls formerly was assistant professor of pathology at McGill University Faculty of Medicine, Montreal, associated with the late Prof. John G. Adami.

Association Postgraduate Work.—The Canadian Medical Association having arranged for postgraduate extension courses in the provinces, the first course was conducted in Saskatchewan by Drs. Edward H. Mason, Montreal, John G. McDougall, Halifax, and Velyien E. Henderson, Toronto, who addressed the Northeastern Saskatchewan District Medical Society, at Yorkton, on "Diabetes," "The Prostate," and "Therapeutics," respectively, and then held clinics at the hospital in the afternoon and evening; they next addressed the Battleford District Medical Society and held a clinic at the Notre Dame Hospital; at a banquet at the Mental Hospital in the evening, Dr. McDougall presented a paper on "Acute and Chronic Conditions of the Gallbladder," illustrated with lantern slides; Dr. Mason, a paper on "Iodine Treatment of Different Types of Toxic Goiter," and Dr. Henderson, a paper on "Use of Various Drugs." The lecturers next met the Prince Albert District Medical Society at a clinic at Victoria Hospital, where several local physicians consulted with the guests concerning their obscure cases; at a clinic at the Holy Family Hospital, Dr. McDougall discussed "Fractures," and Dr. Mason, "Early Pulmonary Tuberculosis"; at a dinner in the evening, there were talks by the guests on "Glycosuria," "Drugs" and "Blood Pressure." The lecturers then met the Saskatoon District Medical Society, then the district medical society at Moose Jaw, and the district medical society at Regina; the last meeting of this tour was with the Swift Current District Medical Society; here also there were clinics, consultations, lectures and general discussions; Dr. Henderson gave a talk on "Vitamins and Endocrines." The correspondent of the *Canadian Medical Association Journal* gives an excellent account of this tour, which, apparently, was very successful.

Society News.—At the annual meeting of the New Brunswick Medical Society, Moncton, Dr. Levi M. Curren, St. John, was elected president; Drs. John B. McKenzie, Loggieville, and Clarence J. Veniot, Bathurst, vice presidents, and Dr. John R. Nugent, St. John, secretary. The next annual meeting will be held at Chatham.——Dr. Ross L. Blackadar, Port Maitland, was elected president of the Medical Health Officers of Nova Scotia for the ensuing year, and Dr. Arthur C. Jost, Halifax, secretary-treasurer.——At the forty-sixth annual meeting of the Ontario Medical Association, Dr. Edgar Brandon, North Bay, was elected president; Drs. Weston Krupp, Woodstock and Ernest A. McQuade, Trenton, vice presidents, and Dr. Thomas C. Routley, Toronto, secretary.——The Vancouver Medical Association has requested the Canadian Medical Association for three physicians to make a tour for extramural postgraduate instruction in British Columbia this fall to speak on orthopedic surgery, medicine dealing especially with such tests as the Dick and Schick tests, and obstetrics and gynecology.——Dr. Robert G. Armour recently addressed the Grey County Medical Society, Markdale, on "Diagnosis and Treatment of Encephalitis Lethargica."——Dr. Frederick B. Bowman, Hamilton, addressed the Simcoe County Medical Society, Allandale, recently, on "Gastric and Duodenal Analysis with Reference to Nonsurgical Biliary Drainage."——Dr. Cecil A. Rae, Toronto, recently addressed the Renfrew County Medical Society, Renfrew, on "Ulceration of the Mouth, Pharynx and Tongue."——Dr. Lorimer J. Austin, Kingston, recently addressed the Thunder Bay Medical Society on "Injuries to the Elbow in Children."——Dr. George Stewart Cameron, Peterboro, Ont., guest of honor at the annual meeting of the British Columbia Medical Association, Victoria, spoke on reorganization of the Ontario Medical Association in 1918; the correspondent in the *Canadian Medical Association Journal* says of this address, "When one hears of forty-seven district medical societies all running full blast with some $25,000 expended in five years on extension work and postgraduate lecturing, smaller associations are apt to become envious. Nevertheless, the British Columbia Association looks forward to the time when it also will have attained a similar degree of vitality." Dr. John H. MacDermot was elected president of the British Columbia Medical Association; Dr. Harold E. Ridewood, Victoria, president-elect; Dr. Wallace A. Wilson, vice president, and Dr. Theodore H. Lennie, secretary-treasurer.

GENERAL

Directory of Medical Reserve Officers.—Under the direction of the Ninth Corps Area Surgeon, Col. E. L. Munson, U. S. Army, Presidio of San Francisco, there has been published a directory of the medical department reserve officers in the ninth corps area (California, Idaho, Montana, Nevada, Oregon, Utah, Washington and Wyoming). It contains the names, rank, addresses and assignments of 2,170 reserve officers, classified by states and by corps, and it will be reissued periodically as changes require.

Fireworks Without Phosphorus.—The manufacturers of fireworks ceased manufacturing all types of fireworks containing white (yellow) phosphorus, August 15, in accordance with an agreement with the U. S. Department of Labor. This action is the result of an investigation of phosphorus necrosis in the manufacture of fireworks, conducted by the department of labor. The investigation covered exposure to phosphorus poisoning also in the manufacture of vermin exterminator and in the phosphorus extracting industry. As a result of eating phosphorus fireworks, nine children died following the Fourth of July, 1925, according to the American Museum of Safety.

Congress of French-Speaking Physicians.—Dr. L. T. Dube, Notre Dame du Lac, is to preside at the public session of the ninth congress of the Association des médecins de langue française de l'Amérique du Nord, Montreal, Sept. 21-24, 1926. The opening meeting will be devoted to "Social Service," Dr. O. Desjardins, Trois Rivières, presiding. Dr. L. Bernard, Paris, will preside at the session devoted to "Prophylaxis of Tuberculosis"; one morning is to be given to "Prophylaxis of Syphilis in Children," and one to psychiatry. Dr. A. Brousseau, Quebec, will describe the new mental hygiene and psychiatry clinic. Among the official delegates from France are Profs. M. Pinard, E. Rist, Armand-Delille and Weill-Hallé. The *Union médicale du Canada* gives further details.

American Hospital Association.—The governor of New Jersey will deliver an address of welcome to the American Hospital Association at its annual meeting, Atlantic City, N. J., September 27-October 1. The administration section will devote Wednesday afternoon to "What Shall Be Done For and With the Middle Class Patient," which symposium will consist of discussions on hospital construction, hospital administration, the municipality, the board of trustees, the physician, the patient and nursing. At a general session, Friday morning, among others, Dr. Norman E. Titus, New York, will speak on "What Is Physical Therapy?" The Hospital Dietetic Council will be addressed by Dr. Louis H. Newburgh, Ann Arbor, Mich., on "Amino-Acids and Their Relations to Health and Disease," and by Dr. Henry J. Spencer, New York, on "Recent Findings in Diabetes." The American Occupational Therapy Association will meet, September 27, in the Right Central Pier Hall, and the Children's Hospital Association of America, September 30, in the Left Central Pier Hall.

Society News.—Dr. Wesley Bourne, Montreal, Canada, among others, will address the annual meeting of the Mid-Western Association of Anesthetists, Kansas City, Mo., October 12-14, on "Usefulness of Intratracheal Anesthesia," and will demonstrate intratracheal methods at clinics.——The American College of Physical Therapy will hold its fifth annual meeting at the Drake Hotel, Chicago, October 18-23, under the presidency of Dr. John S. Coulter, Chicago.——At the recent meeting of the American Academy of Physiotherapy, New York, Dr. Charles F. Hutchins, Syracuse, was elected president; Dr. Frank J. Novak, Jr., Chicago, and Dr. William L. Clark, Philadelphia, vice presidents, and Dr. Byron S. Price, New York, secretary-treasurer, reelected; directors elected include Drs. Frank B. Granger, Boston, Grant E. Ward, Baltimore, Burt W. Carr, Washington, D. C., Harry C. Westervelt, Pittsburgh, Frank A. Davis, Boston, and Leslie C. Sammons, Shelbyville, Ind.——The Tri-State Medical Society, which recently met at Huntington, W. Va., elected Dr. Charles E. Holzer, Gallipolis, president; Drs. John E. Cannaday, Charleston, and James M. Salmon, Ashland, vice presidents, and Dr. Festus O. Marple, Huntington, secretary-treasurer, reelected. The next meeting will be at Huntington in January; the *West Virginia Medical Journal* was made the official journal of the society.

Additional Hospitals Approved for Training Interns.—Since the list of Hospitals Approved for Internships was published in The Journal, April 3, the Council on Medical Education and Hospitals has approved the following additional hospitals for the training of interns:

Santa Fe Coast Lines Hospital, Los Angeles, Calif. Affiliated with White Memorial Hospital, Los Angeles, and the maternity service of the Los Angeles City Health Department, for training in pediatrics and obstetrics.
Jennie Edmundson Memorial Hospital, Council Bluffs, Iowa.
St. Joseph Hospital, Lexington, Ky.
U. S. Marine Hospital No. 14, New Orleans, La. Affiliated with the Touro Infirmary for training in obstetrics, gynecology and pediatrics.
West Baltimore General Hospital, Baltimore.
Missouri Methodist Hospital, St. Joseph, Mo.
Christian Hospital, St. Louis.
St. Mary's Hospital, St. Louis.
Lincoln General Hospital, Lincoln, Neb.
Starling-Loving University Hospital, Columbus, Ohio.
Mercy Hospital, Hamilton, Ohio.
St. Joseph's Hospital, Reading, Pa.

Also the following naval hospitals, each of which has affiliated with one or more civilian hospitals for intern training in obstetrics:

U. S. Naval Hospital, Chelsea, Mass.
U. S. Naval Hospital, Brooklyn.
U. S. Naval Hospital, Mare Island, Calif.
U. S. Naval Hospital, Norfolk, Va.
U. S. Naval Hospital, Philadelphia.
U. S. Naval Hospital, San Diego, Calif.
U. S. Naval Hospital, Washington, D. C.

American Public Health Association.—The fifty-fifth annual meeting of this association will be at the Hotel Statler, Buffalo, October 11-14. The program has been arranged in four sections—general sessions; special sessions; scientific section meetings, and a program arranged by the New York state conference of health officers and public health nurses. A new special feature will be the informal motion picture program of health pictures on Monday, Wednesday and Thursday afternoons from 5 to 6. Governor Smith and Mayor Schwab, Dean C. Sumner Jones, of the University of Buffalo School of Medicine, and the health commissioner of Buffalo, Dr. Francis E. Fronczak, will deliver addresses of welcome. Among the subjects of symposiums will be "Health Demonstrations in the United States," "Rural Health Work," "Health Education and Publicity," "Health Administration," "Municipal Health Administration," "Ventilation" and "Milk." The usual half-day trip for all delegates this year will be to Niagara Falls, where there will be also specially conducted trips through some of the large manufacturing plants. Among the many questions submitted for discussion at the forum session, four have been selected: 1. Shall we abandon placarding homes in which whooping cough and measles are isolated? 2. Can physical examinations of food handlers be justified as a function of the health department? 3. Does not our knowledge of scarlet fever warrant a shortening of the minimum period of quarantine? 4. Is it safe to omit dairy farm inspection from a program of milk control? Other questions may be submitted from the floor following the discussions. There will be a reception and dance, Monday evening.

Special Committee to Survey Government Hospital.—The secretary of the interior, Dr. Hubert Work, has announced the organization of a special committee to conduct a survey of St. Elizabeth's Hospital, the government's hospital for the insane located at Washington, D. C. In his letter inviting the members of the committee to serve (gratuitously), Dr. Work stated that as the government's representative he desired the committee to determine (1) whether or not medical treatment there is recognized as scientifically modern; (2) if the medical staff is qualified; (3) if the nursing personnel is sufficient in number and competent; (4) if the housing space is adequate and sanitary; (5) if the food is wholesome and liberal; (6) if unnecessary mechanical restraints are employed; or, (7) in short, if St. Elizabeth's Hospital is or is not in fact a modern hospital for the most humane care, custody and curative treatment of those necessarily secluded from society for the primary purpose of restoring them to their former positions in the community. He referred to the fact that St. Elizabeth's Hospital was under the general supervision of the Secretary of the Interior and that it had indirectly been made the subject of congressional investigation during the last winter. Invitations to serve on this special committee were issued to Dr. Harry W. Mitchell, superintendent, Warren State Hospital, Warren, Pa.; Dr. George M. Kline, commissioner, Massachusetts Department of Mental Diseases, Boston; Dr. William L. Russell, superintendent, Bloomingdale Hospital, White Plains, N. Y.; Dr. Owen Copp, consultant, Pennsylvania Hospital, Philadelphia, and Dr. Samuel E. Smith, provost, Indiana University, Indianapolis. Dr. Russell was unable to accept the invitation and Dr. Arthur H. Ruggles, superintendent, Butler Hospital, Providence, R. I., was appointed. The committee will begin its work, September 20.

LATIN AMERICA

University News.—The chief executive of Paraguay has requested authority from congress to engage the services of four foreign professors for the faculty of medicine of the University of Asunción.

Hospital News.—The City of La Paz, Bolivia, has appropriated 100,000 bolivianos to build a tuberculosis hospital on a site adjoining the Miraflores Hospital, which will have three sections, one each for men, women and children.

Personal.—The *Revista de Ciencias Médicas* of Buenos Aires states that Dr. F. Jiménez Asúa, Madrid, is to give a three months' course of lectures on hematology and allied topics at the University of Cordoba, Argentina.——Dr. C. Robertson Lavalle, Buenos Aires, was the guest of honor recently at a dinner given in tribute to his success in treating tuberculosis of the joints, his implant method was described in The Journal, March 20, page 916.——Dr. Avelino Gutiérrez was tendered a banquet recently on the occasion of his retirement from the chair of anatomy at the University of Buenos Aires.——Dr. A. Barata da Rocha, on the editorial staff of certain Portuguese medical and lay publications, is visiting South American countries to report on the progress of science.

FOREIGN

Typhoid Outbreak in Germany.—An outbreak of 150 cases and three deaths of typhoid was reported from Hanover, Germany, September 11, due, it is said, to pollution of water brought about by the recent floods. A press report, September 14, states that the epidemic amounted then to 1,200 cases under treatment.

Psychiatrist Wanted.—The University of Sydney, Australia, invites applications for the professorship of psychiatry. According to the *Lancet*, August 21, the applicant selected will be expected to enter on his duties, March 1, 1927, at a salary of £1,100, with an allowance of £150 for traveling expenses to Sydney from Europe. Applicants should have served in a mental hospital and be interested in clinical rather than pathologic work.

Professors Awarded Damages from Copyist.—The Paris court of appeals recently confirmed the sentence imposed on a man who made shorthand copies of lectures delivered by various professors in the medical faculty and the faculty of pharmacy and offered them for sale to the students. The deans of the two faculties brought the suit against him, but the court required the ten professors themselves to make the definite charge; each was awarded 100 francs damages, the amount asked.

Control of Serums Used in Prophylaxis and Treatment.—The public health service of Germany has appointed a committee to study ways and means for control of human serums used in prophylaxis and treatment of measles and other diseases. The recent death of a child from staphylococcus sepsis after a preventive injection of measles convalescent's serum, obtained from a hospital, was explained by similar contamination of one out of three other vials sent by the hospital. Dr. A. Schlossmann places the blame for this tragedy on the heedlessness of the national and state governments in respect to the subject of obtaining, testing and dispensing serums; his article in the *Deutsche medizinische Wochenschrift* is entitled "An Appeal for Protection Against Protecting Serums."

Deaths in Other Countries

Dr. Robert H. Cole, physician and lecturer in mental diseases, St. Mary's Hospital, Paddington, England, recent president of the psychiatric section of the Royal Society of Medicine, author of Textbook of Psychiatry and former vice president and secretary of the section of psychologic medicine of the British Medical Association, August 10, aged 60.——Dr. C. H. Kuhn, professor emeritus of anatomy at the University of Amsterdam, aged 77.——Prof. G. Thibierge, Paris.——Dr. F. Commandeur, professor of obstetrics at the University of Lyons.——Dr. F. von Hofmeister, chief of staff of a Stuttgart hospital, aged 59.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 28, 1926.

The Evils of the Insurance Act

TOO MUCH DRUGGING

Sir Walter Kinnear, controller of the insurance department of the ministry of health, declared at a meeting of one of the societies that one of the most disheartening things in the administration of the insurance act was the large sum of money spent every year on drugs, amounting to between 10 and 10½ million dollars. This represented a great wastage of money, and unless there was some diminution it would be necessary to make efficient administrative arrangements which would tend to check that expenditure. He was convinced that *timely treatment in convalescent homes* would be of more value than all the drugs in the British pharmacopeia. I may point out that the wastage of money on drugs could have been foreseen as inevitable by any one acquainted with medical practice in this country, but it evidently never troubled the politician mainly responsible for this socialistic scheme. Our working classes have a childlike faith in medicine, for real as well as imaginary ills, and are drugged a great deal too much even when they have to pay. But the insurance act provided them with medical attendance, which practically always means drugs, without having to make any payments. The panel physicians are evidently too complaisant in prescribing. Once again is seen a fundamental defect of all socialistic schemes—the encouragement of waste.

UNJUSTIFIED SICKNESS CLAIMS

The widespread unemployment resulting from the coal strike has caused a serious drain on the national insurance funds. The minister of health has noted with much concern the abnormal increase during the last two months in the number of insured persons receiving sickness and disablement benefit and the resulting heavy expenditure. Information available from other sources does not indicate the prevalence of any marked epidemic or exceptional outbreak of sickness which would account for this increase in the number of cases of certified incapacity, and it is significant that the ratio of expansion is not uniform throughout the country and that its distribution corresponds closely with the incidence of unemployment due to the coal strike. The examination of a large number of cases referred to referees, and the high proportion of claimants who sign off in preference to presenting themselves for examination suggest that large numbers of insured persons have succeeded in obtaining or continuing to obtain medical certificates although they were not in fact incapable of work. The minister cannot escape the conclusion that many physicians in the industrial areas mainly affected have failed to appreciate the danger that in times of acute unemployment there is inevitably a tendency to magnify minor ailments and to claim sickness benefit in circumstances in which, under ordinary conditions, no claim would be made. Normally the difference between sickness benefit and average earnings is sufficient to afford the employed person a substantial inducement not to leave work and to return to it as soon as he is able to do so; and physicians have, no doubt, in the past proceeded on the assumption that in cases in which there were no definite physical signs, the patient's account of his subjective symptoms might, in general, be accepted in the absence of any indication to the contrary. But in many areas this economic safeguard against ill founded claims no longer exists, and the minister fears that physicians have not sufficiently realized that all increase in the number of claims in itself necessitates more than ordinary care in considering whether the conditions for the receipt of sickness and disablement benefit have been fulfilled. He therefore has to remind physicians that the statutory test of title to these benefits is that the insured person has been rendered incapable of work by some specific disease or bodily or mental disablement, and that strict regard must be had to this criterion in considering all cases coming before them. No physician should allow the economic position of the applicant for a certificate to lead him to adopt a less stringent standard than the acts require. Any laxity in the issue of certificates, whether unconscious or deliberate, is extremely unfair to those physicians who have continued to take a strict view of their obligations. Indulgence to individual members of approved societies must deprive members in general of sums that might otherwise have been used in providing additional benefits in the future. This leakage again illustrates the disastrous consequences inherent in all socialistic measures. They show "the seamy side" of the insurance act and should serve as a warning to America against following such an example.

Irresistible Impulse as a Defense in a Murder Case

In 1923, as was reported in The Journal (Jan. 6, April 28, May 5, 1923), an important committee of official lawyers, with Lord Justice Atkin as president, was appointed to report on the vexed question of criminal responsibility, which has long been a bone of contention between the medical profession and the judges. The report was a victory for the former, as it went much further than the famous McNaghten formula. The committee was satisfied that cases of mental disorders did exist in which the impulse to do a criminal act recurs with increasing force until it is, in fact, uncontrollable. The committee found that cases were not uncommon in which mothers, normally devoted to their children, cut their children's throats or otherwise took their lives. In such cases, the committee said, the accused knows the nature of his act and knows that it is wrong, and the McNaghten formula is not logically sufficient. The committee thought that such cases should be brought expressly within the law by decision or statute. It should be made clear that the law does recognize irresponsibility on the ground of insanity when the act was committed under an impulse which the prisoner was, by mental disease, in substance deprived of any power to resist. The committee gave some grounds for thinking that the existing law was already as thus stated. However, the court of criminal appeal has refused to accept the principle that irresistible impulse may be a good defense in criminal trials. A man, aged 24, but described as having the intelligence of a boy of 14 or 15, was convicted of the murder of his stepbrother. No fewer than eight of his relatives had either died or been confined in psychopathic institutions. He got up in the night, put on his best clothes, went downstairs, procured an ax, and with two blows kill his stepbrother as he lay in bed. He was convicted of murder, and his appeal failed, though the government has since commuted his sentence. For the defense there was the recommendation made by Lord Justice Atkin's committee quoted above. The committee added that it might require legislation to bring this rule into effect, but parliament has done nothing, and now the judges have refused to intervene. The court of criminal appeal gave its usual answer that the judge had summed up fairly at the trial, and the jury had found a verdict supported by evidence, and that the further disposal of the accused man rested with the home office.

Effect of Milk on the Growth of Boys

Investigations carried out during the last four years by Dr. H. C. Corry Mann, on behalf of the medical research council, with regard to diets for boys during school age, show a curious result. The addition of a pint of milk a day to a diet, which by itself satisfied the appetite of growing boys fed on it, converted an average annual gain of weight of $3\frac{85}{100}$ pounds (1.75 Kg.) per boy into one of $6\frac{98}{100}$ pounds (3.2 Kg.), and an annual average increase of height from $1\frac{85}{100}$ inches (4.7 cm.) to $2\frac{63}{100}$ inches (6.7 cm.). This unmistakable betterment in nutrition was proved by trial to be due, not to the relatively small increase in the fuel value of the dietary, nor to the extra protein supplied in the milk, but rather to more specific qualities of milk as a food. The improved gains in weight and height, taken as the measurable characters in this inquiry, were found to be accompanied regularly by improved general health and by improvement in what may perhaps be called "spirit."

Protest Against New Dangerous Drugs Regulations

In a previous letter to The Journal, the new dangerous drugs regulations were described. The council of the National Medical Union, an association of physicians opposed to the panel system, takes exception (1) to the proposal to set up a tribunal composed of three physicians and one legal assessor to deal with cases of infringement of the regulations, instead of these cases being dealt with, as at present, by the ordinary courts; (2) to the proposal to empower the home secretary to withdraw from physicians found guilty by the tribunal the right to possess and even to prescribe dangerous drugs, such penalty having the effect of making it impossible for such physicians to continue in practice; (3) to the proposal to make the home secretary the final authority without right to appeal to the courts of law, which proposal is contrary to the basic principles of British justice; (4) to the proposal to place on nondispensing physicians the obligation of keeping records of their purchased supplies of the dangerous drugs, on the grounds that the properly made out prescription or order, which is retained by the wholesale or retail chemist, contains all necessary information and is sufficient safeguard. The union holds that the attempt which is being made in various directions to bring the members of the medical profession under bureaucratic control must be resisted; otherwise the profession will become pawns in the hands of officials and government inspectors.

School Children's Health in London

The annual reports for the year 1925 of the school medical officer for London contains an interesting comparison with the conditions thirty years ago. Twenty-five years of education had at that period already effected a marked improvement in the general appearance of the child population. The days "of unregulated child labor, of boy bootblacks and child crossing-sweepers" had gone, school places had been found for all children of school age, the habit of regular attendance was almost acquired. But nothing was being done for the physical condition of the children. There were no school physicians, no school dentists, no system of special schools, no proper physical education, no children's baths, no school hygiene, no school feeding. There was scarcely an indication of that movement toward physical care of the school child which has been such a prominent feature in the later history of the education system. The growth in the medical activities of the council has been consistent and rapid. In 1910, arrangements were made with seven hospitals for the treatment of 12,700 children, and in 1912 there were three *ad hoc* "treatment centers." In 1925 there were seventy-three hospitals and treatment centers in the scheme, providing for the treatment of 254,000 ailments annually, including 120,000 dentally treated. School camps, open-air education, convalescent treatment, sight-saving classes (increased from five in 1914 to twenty-six in 1925), and a great campaign against uncleanliness are some of the many achievements. The worst forms of dirt infestation have practically disappeared. Defective teeth, from which 80 per cent of pupil teachers were found to be suffering in 1898, are no longer a serious difficulty. In 1925 the percentage of scholarship holders found to require dental treatment was only 7 per cent. From 1911 to 1914 the deaths per thousand infant births averaged 108. In 1925 it was 68. Better education and the teaching of the maternity and child welfare centers have led to some improvement in the physical condition of entrant children. Of the whole number of children examined in the various age groups, 12,518, or 6.3 per cent, were found to be undernourished, as compared with 12.8 in 1913. The figures show that with the existing remedial agencies a period of prolonged unemployment "has produced surprisingly little effect on the nutrition of the children."

PARIS

(From Our Regular Correspondent)

Aug. 25, 1926.

Films of an Educational Character

A great effort is being made at present by the leagues of social hygiene to promote the use of films for general publicity purposes, an excellent method, which is not sufficiently applied in France. Motion pictures have had a great influence in developing a taste for adventure among juveniles. Many young bandits learned their first lessons in banditry in the "movies," as they themselves have frequently admitted when brought before the judges. We ought, therefore, to use the film, which is sometimes the teacher of evil, for the teaching of the good. The League of Social Hygiene has prepared several instructive films to be used for the dissemination of ideas on public health, which it offers gratuitously, or at very low prices, to the motion picture theaters. The league hopes to secure the passage of legislation which will require the presentation of one of these films during the course of all motion pictures consisting of several parts. There are some very fine films among the number, great intelligence having been shown in their preparation. They are calculated to enliven certain pictures that stir the imagination of the masses. The effects of alcoholism, the campaign against tuberculosis, the hygienic care of the home, and first aid to resuscitate the apparently drowned or asphyxiated have been depicted in excellent pictures. One of the most interesting of the pictures bears the title "The Future Mother," and is the product of the genius of Dr. Devraigne, obstetrician at the Hôpital Lariboisière in Paris. It presents in detail all the principles of child training, from the first dressing of the infant at birth down through the various periods in a child's development, with the calculation of progressive diets and the prophylaxis of all the more frequent diseases of childhood. This film was first presented before the Academy of Medicine, where it met with high approval, and it scores no less success every evening when displayed before large theater crowds. These are some of the beginnings of a new art, which promises to have excellent social results. France is behind America in this field. During the war, American missions passed through the country projecting films of this kind in all the towns and villages, and their example was very useful in making understood here the value of this mode of publicity campaign. But it is an art which has laws of its own, and which must be studied. Some producers of educational films, the better to hold the attention of the public, which is inclined to assume a childish mind before the screen, have endeavored to mix humor with their representations and have not always avoided bad taste. Other films, especially those that deal with the question of depopulation, or race suicide, make an improper use of statistics by projecting long columns of figures on the screen, which the public has not the time to read and which are not as startling as is imagined. Graphic methods, which popular statisticians are so prone to adopt, are better adapted to printed books than to screen productions. While this mode of comparison requires only a weak effort of the imagination, it is, nevertheless, too much to expect of the average frequenter of motion picture theaters, who seeks only visual sensations presented rapidly and requiring no reflection. Dramatized stories showing hygiene in action, the characters of which represent those who observe the rules of hygiene and those who do not observe them, appeal more to the imagination of the audience and exert a more durable effect. In the film of Dr. Devraigne "The Future Mother," the author has prepared a scenario in which young Margaret, who has taken a course in child care, is represented as contending with old Mag, who personifies old customs and traditions. As the scenes from the life of the people are well depicted and the whole play is enlivened by a touch of healthy humor, the effect produced is excellent.

If this mode of representation is to secure good results, good judgment must be shown in adapting the material to the surroundings and to the purpose in view. The mere projection of figures from a scientific treatise, as has often been done, has never had much effect on the motion picture theater audience.

The Centenary of Laënnec

Laënnec, one of the founders of modern medicine and the discoverer of mediate auscultation, died, Aug. 13, 1826. The centenary anniversary of his death has been honored by a scientific festival, which was divided into two events, one of which has already taken place at Kerlouarnec in Brittany, where Laënnec died, and the other is to be held at Paris, where he was a professor at the Faculty of Medicine. The latter event has been postponed until next December, since the month of August, the vacation period, is not favorable for a meeting of scientists of all countries such as is contemplated, and would not be favorable even for a gathering of French savants, since so many have left the city on journeys in all directions.

The ceremonies in Brittany, though not of an imposing character, were nevertheless impressive. They were held in the home of the Laënnec family, in which Dr. Laënnec died, and in the little cemetery at Plouaré, where he was buried. The tomb is a massive and severely plain mausoleum, which bears the following inscription: "Here lies the body of René Théophile Hyacinthe Laënnec, physician to the Duchess of Berry, lecturer and professor of medicine at the Collège de France, clinical professor at the Paris Faculty of Medicine and at the Royal Academy of Medicine, and knight of the Legion of Honor; born at Quimper, Feb. 17, 1781; died at Kerlouarnec, August 13, 1826."

The ceremonies included several addresses; among others, those of Dr. Lagriffe, president of the Laënnec Society of Quimper; Dr. Mevel, who described in Laënnec the Breton whose qualities of character were those of his native soil; Dr. Laignel-Lavastine, president of the Société française de l'histoire de la médecine and agrégé professor of the Faculty of Medicine of Paris; Professor Chauffard, representative of the Academy of Medicine; Dr. Follet, director of the school of medicine at Reims, the center of medical instruction in Brittany, and, finally, the mayor of Plouaré. It was mainly a gathering of the home folks, the scientific glorification of the work of Laënnec being reserved for the celebration to be held in Paris in December. The addresses brought out the intimate character of the man, who, although the recipient of many honors, remained simple in his manners and continued to show the same kindly spirit toward his more humble fellow citizens, notwithstanding the fact that he assumed a cold and almost stern demeanor when at court or among high state officials. When attacked by tuberculosis, he returned to his native heath, where he found also his last resting place.

The Demolition of Insanitary Centers in Paris

The municipal council of Paris has decided to follow the example of London and to order the destruction of groups of old houses, which form, often in the vicinity of good sections, such insanitary spots that disinfection is possible only by means of fire. In 1905, the Conseil d'hygiène et de salubrité had discovered six sections of this kind in the city, in which mortality from contagious diseases, and especially from tuberculosis, reached high figures. In 1919, after the war, a new investigation was made, which added eleven more sections to the previous list. The present condition of municipal finances makes it impossible for the city to condemn at present all the sections found to be insanitary, but the city council has decided to begin operations with the demolition of some of the worst buildings in the section between Boulevard Sébastopol, rue de Réaumur and rue de Rivoli, in the third and fourth wards.

Investigations and attempts at disinfection during the past fifteen years have proved that they cannot be rendered sanitary. Their insanitary condition has resulted from the narrowness of the streets and from the absence and insufficiency of interior courts, as a result of which most of the apartments get little or no sunlight. The only way to remedy such a situation is to demolish the infected houses, widen the streets, and build sanitary apartments with ample provision for the entrance of sunlight and air. The section concerned comprises 347 houses, in which 12,653 persons reside, and from 1894 to 1919 the average number of deaths from pulmonary tuberculosis in this quarter reached 10.38 per thousand inhabitants, which is almost three times as high as the annual tuberculosis mortality rate for the city of Paris. For the time being, only ninety-one of the worst houses of the quarter, from the standpoint of tuberculosis mortality, have been condemned. These houses, many of which represent some of the last vestiges of the homes of the Middle Ages, are located in rues de Venise, Simon-le-Franc and Brisemiche.

First Aid in Theaters

The prefect of police in Paris is preparing an ordinance pertaining to the regulation of the medical service in theaters and concert halls. The present regulations require the presence of a physician for the duration of the performance as a protection against accidents among the spectators or the personnel of the stage: actors, dancers, machinists and others. Such accidents are rare, but they may be serious. Unfortunately, the presence of a physician is, for the most part, the only precaution taken. When an accident occurs, the physician has, as a rule, no definite course open to him. Only the Opéra, the Opéra-comique, the Comédie française and the Odéon, official theaters receiving subsidies from the government, have a small room to which the patient may be taken, and where the physician will find a few drugs and a few dressings. In the other theaters, even the most luxurious, there is nothing similar, and medical care is given in the office of the manager, where one finds sometimes a small cabinet and a few empty or half-empty bottles. The only effective aid consists therefore in calling a taxi and sending the patient home, after stopping at a pharmacy. There is in Paris a union of theater physicians, which has protested for a long time against this state of affairs and which has finally succeeded in getting the attention of the municipal council. At the request of that body, the prefect of police, who has general supervision over the theaters, has decided, after discussing the matter with the union of theater physicans, that every theater must have a special room for the care of patients in case of sudden illness or accident occurring during the performance. The room must be provided with such material and equipment as are needed to give first aid to patients.

Activation of the Potency of Insulin and the Treatment of Diabetes

M. Gabriel Bertrand, professor at the Sorbonne and at the Pasteur Institute, has shown in a communication presented to the Academy of Sciences that the potency of insulin for the elimination of glucose in the blood is considerably increased when the reaction takes place in the presence of infinitesimal amounts of nickel and cobalt. He has shown also the presence of these two metals in a normal state in the tissues of the pancreas. By previous studies on ferments he had been able to demonstrate the important rôle of accessory metals in the action of a principal metal on the organism—manganese in exceedingly small doses activating, for example, the effects of iron, and fluorine being necessary for the prompt metabolism of calcium. The action of these metals, in infinitesimal doses, as stimulants of the internal secretions, and possibly even being a necessary condition on which their potency depends, seems to have opened a new chapter of physiology and therapeutics. Homeopathists especially are following these researches with the greatest interest. In any event, recent experiments of Gabriel Bertrand and M. Machebeuf, and of Professor Rathéry and Mlle. Levina, have served to establish that the salts of nickel and cobalt, injected subcutaneously or ingested by mouth in minimal doses, will diminish, to a considerable degree, glycemia and glycosuria in patients with diabetes and will increase their tolerance for carbohydrates. In some cases, by such treatment alone, it has been possible to bring about a total disappearance of sugar—at least, temporarily, as after the administration of insulin. It would seem that this fact can be explained only by the stimulation produced by these two metals on the potency of insulin supplied by the patient's own pancreas. Future experiments will show whether these metals will take the place of insulin, the management and dosage of which always remain a difficult matter.

ITALY

(From Our Regular Correspondent)

July 31, 1926.

The Italian Congress of Internal Medicine and Surgery

The thirty-second congress of the Società italiana di medicina interna will be held in Padua in October. The three chief topics on the program are: (1) the surgical treatment of pulmonary tuberculosis, in which the Società di chirurgia will participate, by Prof. Francesco Gaddi and Prof. Nicola Leotta; (2) angina pectoris, by Prof. Pietro Castellino and Prof. Tomaso Pontano, and (3) biologic reactions in clinical diagnosis, by Prof. Giorgio Cevolotto.

At the same time, the Società italiana di chirurgia will hold its thirty-fourth congress in Padua, the main subjects up for discussion being: (1) the surgery of the visceral sympathetic, by Prof. M. Donati of Padua, and (2) the surgical treatment of pulmonary tuberculosis, in which the Società di medicina will collaborate, by Prof. N. Leotta.

Medical Publicity

At a recent meeting in Rome of the federation of Italian medical societies, a resolution was passed that all publicity that concerns the public health must be first visaed by the president of the medical society of the respective province. According to the resolution, professional men may publish in medical directories or in journals merely their names and addresses, their specialties and their titles. Resolutions have been passed also by other societies, urging the national government to control medical publicity.

A National Federation of Private Therapeutic Institutes

A national federation of private therapeutic institutes was recently established in Rome. The federation set forth, as among its most important purposes, to promote the technical and economic improvement of the federated institutes; to collect useful data; to assist the federated administrations in their relations with local and central authorities, with the industries from which they secure their supplies, and with their own personnel. Many institutes have become members of the federation.

Rice Culture in Relation to Malaria

In the report of the commission appointed to study malaria in relation to the agricultural regions of Italy, Professor Giardino points out that malaria, already widely disseminated throughout the Po valley, has been decreasing in recent years, particularly in the rice-producing areas. The decrease is due to complex factors, among which are the diffusion of a knowledge of hygiene and improved sanitary aid. The rice fields, however, constitute an excellent environment for the development of *Anopheles,* but the present type of *Anopheles* is less productive of malaria. In the report, Professor Alessandrini's explanation of this is that the water in the rice fields is highly oxygenated and contains a rich flora of green algae, which two factors promote better respiration and better nutrition for the larvae than was possible in the swamps that the rice fields replaced. From these stronger larvae develop mosquitoes with greater resistance, which are able to destroy the malaria parasite if it gains entrance to their digestive tract.

The Crusade Against Social Diseases Among Juveniles

The minister of the interior (the general administration of public health) has called the attention of the prefects of the realm to the need of hygienic administration of all educational institutions. This should be accomplished by means of periodic visits by the physicians of the communes to all the public and private schools. The physicians should prepare the health record of each child from year to year and should be aided by the society called Assistenti sanitarie scolastiche, the activities of which should include visits to the homes of the families of the pupils and students. Also the society of Patronati scolastici should be of aid. Encouragement should be extended to the establishment of open-air schools and summer vacation colonies. Every institution should wage a campaign against social diseases. This type of work should be carried on also in regions in which malaria is prevalent.

Special Honors Conferred on Dr. A. Bertarelli

The Consiglio degli instituti ospedalieri of Milan bestowed special honors recently on Dr. Ambrogio Bertarelli, director of the Ospedale Maggiore. Professor Papini, director of the Clinica Dermosifilopatica of the University of Milan, gave the assembled gathering an account of the career of Bertarelli, who has contributed so greatly to the progress of dermatology in Milan. He furnished the impetus that led to the creation of the photoradiotherapeutic department in the Ospedale Maggiore. Two gold medals of merit were conferred on him.

Visit of American Physicians in Florence

Proceeding from Rome, the Postgraduate Assembly of Physicians of North America and the Postgraduate Interstate Association spent a few days in Florence, where they were received in the Great Hall of the university. The guests then visited the various clinics. During the visit at the Clinica Chirurgica, Professor Burci explained briefly operative methods adopted by him and his school, which present a certain degree of originality and initiative. Professor Comolli, assistant in the Clinica Chirurgica, gave an exposition of his own operative methods.

Two large groups of American roentgenologists and dermatologists visited the Clinica Dermosifilopatica and the annexed Istituto Fototerapico.

The American physicians visited lastly the Istituto di Patologia Generale, where studies on cancer were in progress, and the Careggi tuberculosis sanatorium, which is administered by the Ospedali riuniti of Florence.

VIENNA

(From Our Regular Correspondent)

Aug. 14, 1926.

The Increase of Trichinosis

The ministry of health has called attention to the fact that whereas, in 1925, only seven cases of trichinosis were reported in Austria, four of which proved fatal, during the first half of 1926 eleven cases were recorded, with one death. The cause is supposed to lie in increased imports of pork from infected and imperfectly controlled regions of the Balkans. Furthermore, in rural sections raw smoked ham is commonly eaten. The attention of rural physicians is called to the likelihood that many cases of trichinosis go unrecognized among the rural population and are treated as rheumatism, gout or influenza—with or without diagnosis.

Modern Surgical Treatment of Pulmonary Tuberculosis

The chief physician of the largest Austrian tuberculosis sanatorium, Dr. Maendl, delivered recently an address on the indications for and methods of surgical treatment of pulmonary tuberculosis. He advised, above all, treatment in tuberculosis sanatoriums. A sufficiently long period of observation should precede treatment by pneumothorax, and the speed of precipitation of erythrocytes should be known for purposes of prognosis and control of the treatment. Only severe, destructive, for the most part unilateral processes, with the patient in good general condition, and still young, without marked hemoptysis, are suitable for pneumothorax treatment. Contraindications are: age of patient above 50, diffuse intestinal tuberculosis, bilateral tuberculosis of the kidney, emphysema of the better lung, and severe organic heart disease, even though compensated. On the other hand, Dr. Maendl does not regard these conditions as contraindications: diabetes, tuberculosis of the larynx, operable tuberculosis of the cecum, unilateral tuberculosis of the kidney, pregnancy or a preceding pleuritis of the side to be operated on. As to technic, he uses always the blunt puncture method and the Salomon cannula. The amount of gas to be injected, the degree of pressure, and the length of the interval, will vary greatly in individual cases, and will be determined by observation of the manometer. In 600 cases of initial pneumothorax he did not observe gas embolism, pleural shock or mediastinal emphysema; nor in the many thousand instances of supplementary infusions. Exudates he treats conservatively; they are often favorable rather than otherwise. That the gas is absorbed more rapidly at the time of menstruation is peculiar. Perforation of the lung is occasionally followed by the appearance of pneumonia. It is sometimes necessary to institute pneumothorax alternately in the lungs but seldom in the two at once. Lasting good results extending over a period of ten years have been observed. Phrenicotomy alone or in combination with pneumothorax (twenty cases) gives good results. In thoracoplasty, he is very cautious as to indications; for instance, large cavities constitute an unfavorable prognosis. However, in twelve such cases he had good results.

The Action of Roentgen Rays on the Brain

At a recent meeting of the Chirurgische Gesellschaft of Vienna, the subject of diagnostic and therapeutic irradiation of the brain was discussed. From the clinic of Professor Eiselsberg, Demel exhibited several young dogs in which, nine months previously, in four sittings, with four-day intervals, the cranium had been irradiated. The animals showed disturbance of growth and of gait and gave evidence of optic nerve atrophy. Histologic preparations from some of the dogs that had been recently killed showed hemiatrophy of the brain. Brunner exhibited his preparations, made four weeks after irradiation, which revealed that the effect of roentgen rays on the ectodermal brain tissue was only slight, whereas the connective tissue of the vessels was much affected, with the result that not only considerable brain tumefaction but also a hydrocephalus had developed. These were the early effects of roentgen rays, whereas Demel's observations showed late effects on the growing brain. Sgalitzer pointed out that the sensitiveness of the various cell groups of the organism to roentgen rays varies greatly. In general, cells are the more sensitive to roentgen rays, the more rapidly the cell division processes are taking place in them. In the adult brain the sensitiveness of the ganglion cells, the glia cells, and the nerve fibers, is much reduced. Therefore, there is no danger of injuring the adult central nervous system by therapeutic doses of roentgen rays. Only the early reaction of radiosensitive tissues (hyperemia and edematous swelling) constitutes something of a menace. Dr. Moszkowitz pointed out that American authors had reported favorable results from heavy roentgen-ray doses in the treatment of tumors of the brain and the spinal column. The brain supports these well because the ganglion cell, having reached the limit of its differentiation, is no longer capable of division and is thus no longer sensitive to roentgen rays. The growing tumor, however, in which cell division is actively taking place, is easily injured by the rays. Dr. Fuchs explained the assumption of ophthalmologists that roentgen rays affect eyes that are in the process of development. He cited a case in which, following irradiation of the uterus during pregnancy, bilateral microphthalmus with coloboma of the choroid and coloboma of an optic nerve developed in the child. In the irradiated dogs that were exhibited he found changes of the retina, which resembled similar malformations in man.

Increase of Mosquitoes in Vienna

The floods that have swept over large areas of this country during the last ten weeks have brought a plague of mosquitoes (including *Anopheles*) in many districts. Vienna, especially, is suffering since floods have invaded the numerous parks and wooded regions along the Danube. For a long time there has been an ineradicable focus of malaria in Vienna. There is therefore some danger of an increase of malaria. The city of Vienna is endeavoring to destroy the breeding places of the pest.

Prize Offered for Best Researches on the Physiology and Pathology of High Plateau Regions

The town council of Semmering has offered a prize of $200 for the best article or monograph that has appeared, during the previous two years, on the effects on man of the climate of high plateau regions. The prize will be awarded by the department of natural sciences, of the Academy of Sciences, in Vienna. The decision will be made in January, 1927. The contest is open to foreigners, but the researches, which must be submitted by Dec. 31, 1926, must be carried out in Austria. The purpose of the contest is to determine what are the active factors of a sojourn in a region about 1,000 meters above sea level, for the outstanding favorable results in exophthalmic goiter, neurasthenia, diseases of the respiratory tract, and anemia, that are secured in Semmering, have not as yet been satisfactorily explained from the theoretical point of view.

BERLIN

(From Our Regular Correspondent)

Aug. 21, 1926.

The Expenditure of Energy in Musicians

Under the direction of Prof. A. Loewy of Davos and H. von Schroetter of Vienna, as reported in the *Klinische Wochenschrift*, air-tight masks and rubber hoods were applied to the heads of members of the Davos orchestra and to a number of singers, both men and women. Thus, by means of gas meters, the amount of energy expended in singing and in playing various instruments was measured. The results show that the expenditure of energy in whistling, speaking and singing, and, strange to say, in the playing of brass instruments is comparatively slight. Pianists and players of stringed instruments consume much more energy. The amount of energy expended by the director of the orchestra appears to be exceedingly slight.

Care of Tuberculous Children

At a recent session of the federal council on public health (a body of experts appointed to advise the federal public health service, or *Reichsgesundheitsamt*), the need was recognized of modifying the system of sending tuberculous or menaced children to institutions. Abuses have existed in (1) the selection of children, and (2) the character of the institutions. Children should be selected solely on the basis of whether or not they need treatment. Recommendations should be made chiefly by physicians. Competent opinion as to proper institutions is available at the public health bureaus and the tuberculosis welfare centers. When these mentioned requirements cannot be met, selection of children must be left to a central observation station (a hospital or sanatorium). When previous observation has been inadequate, the sanatorium must decide whether or not the child shall remain and what his treatment should be. All agencies shall cooperate to prevent children from being sent to inappropriate institutions. Children clinically healthy, irrespective of whether or not they are infected with tuberculosis, are not to be sent to institutions. Distinction should be made between measures to strengthen children and therapeutic procedures under medical direction. Recuperative measures should be applied to children who are infected and are physically weak but do not present pronounced tuberculous symptoms. Ordinarily, children should not be sent to recuperative centers for less than six weeks. Children in need of therapeutic care must never be sent to recuperative centers where they may infect others. For strong children with inactive tuberculosis, ambulant treatment should be employed. Only children with active tuberculosis require therapeutic procedures. A sojourn for climatic benefits or recuperation is without value unless extended over at least three months. In cases of tuberculosis of the bones and joints, prompt action may be necessary to prevent crippling of the child. Warning was given against indiscriminate use of tuberculin, and the use of tuberculin was discussed.

TUBERCULIN AS AN AID IN DIAGNOSIS

In the ointment reaction of Moro, a portion of tuberculin ointment about the size of a pea is rubbed with the finger into the skin of the chest. (Preparation of a tuberculin ointment that has uniform action is difficult.) Ether rubbed into the skin before the tuberculin ointment is applied increases the capacity of the skin to react. If the reaction is positive, extremely small nodules develop within forty-eight hours (the number varying directly with the degree of reaction), which are surrounded by a more or less extensive reddening of the skin. If the reaction is doubtful or negative, the test is repeated in two days. If again negative, the cutaneous test (Pirquet's reaction) is instituted with undiluted old tuberculin on the inner aspect of the forearm. By this graded testing an existing sensitiveness to tuberculin will be increased to such an extent that a negative result in the third test will exclude tuberculosis with reasonable certainty. However, if still greater certainty is desired, the intracutaneous test may be employed, for which one injects 0.1 cc. of a 1:1,000 old tuberculin solution into the uppermost layer of a raised fold of skin. It is not advisable to apply the intracutaneous test unless it is preceded by the cutaneous test.

TUBERCULIN TREATMENT

In applying tuberculin as treatment, it must be recognized that the significance of changes in the organism brought about by tuberculin with reference to the course of tuberculosis in children is still uncertain. Tuberculin treatment *should be applied only after careful consideration of the* clinical condition of the patient. To prescribe tuberculin treatment solely on the basis of positive reactions (especially after examining large groups) is not indicated. All methods of prophylactic application of tuberculin are still in the experimental stage. The relative tolerance of children for tuberculin must not lead to premature conclusions. Articles on the uses and the application of tuberculin should contain exact information in regard to case histories and results.

The communication which Professor Bier, the director of the university surgical clinic, sent in to be read at the session of the federal council is of considerable interest in this connection: "Tuberculosis sanatoriums in Germany may be as successful as those in high plateau regions, or in southern Europe, or anywhere else. Owing to finances, comparatively few tuberculous persons can take advantage of foreign sanatoriums. The number of tuberculous persons in Germany is so great that the question of erecting a sanatorium in a foreign country is of little importance to the general public health. Ambulatoriums for tuberculous patients of the type established in the university surgical clinic, which has been in operation since 1920 and which has achieved success, are more practical than sanatoriums. Here tuberculous children stay only during the day and are given sun and light treatment, physical exercises and suitable food. The children are kept busy all day, and the baneful effects of idleness, commonly noted in the sanatoriums, are avoided. The children are able to keep abreast of their classes in school, although they receive instruction only for a period of four hours, three days a week. In the open air and under the influence of suitable exercise, they learn, in spite of their illness, much better and much more rapidly than in the close school rooms. The children are not withdrawn from the family, and such arrangements and equipment cost only a fraction of what the sanatoriums cost, so that, with the means at our disposal, much more can be accomplished."

Marriages

JOSEPH E. NOWREY, JR., to Miss Edith Ann Novella Davis, both of Camden, N. J., at New York, August 18.

BERNARD J. LACHNER to Miss Anne L. Canty, both of Rock Island, Ill., at East Moline, August 21.

MILTON MADISON WELLS, Fairland, Ind., to Miss Dora Hazelrigg of Adams, June 30.

ARTHUR F. HAAG, Chicago, to Miss Lucille Isabelle Beggs of Hudson, Wis., August 21.

EDWARD JULIUS STIEGLITZ to Miss Lillian Peterson, both of Chicago, September 2.

Deaths

Samuel Hendricks Rosenthal, Rochester, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1900; member of the Medical Society of the State of New York; formerly on the staff of the Park Avenue Hospital; served during the World War; aged 47; died, August 25, at the Mount Sinai Hospital, following an operation.

Eric Ericsen Sattler ⊕ Cincinnati; Miami Medical College, Cincinnati, 1882; formerly on the faculty of his alma mater; at one time on the staff of the Cincinnati General Hospital; delegate to the International Medical Congress, Berlin, 1890; author of "History of Tuberculosis," 1883; aged 66; died, July 25, following a long illness.

Charles E. Walton, Cincinnati; Pulte Medical College, Cincinnati, 1874; formerly dean, registrar and professor of operative and clinical surgery and gynecology at his alma mater, and associate professor of gynecology, Cleveland-Pulte Medical College; on the staff of the Bethesda Hospital, where he died in August; aged 77.

Thomas Davis Merrigan ⊕ New York; Medical Department of the University of the City of New York, 1887; formerly emeritus professor of anatomy, Fordham University School of Medicine, New York; aged 61; died, August 1, at the Rockaway Beach (N. Y.) Hospital, of pneumonia following influenza.

Joseph Schoolfield Jones, Galveston, Texas; University of Texas Department of Medicine, Galveston, 1902; member of the State Medical Association of Texas; county health officer; served during the World War; aged 46; died, August 20, at St. Mary's Infirmary.

Armin Fischer, Newark, N. J.; University of Budapest, 1882; member of the Medical Society of New Jersey; formerly state health commissioner; at one time on the staff of the Newark Beth Israel Hospital; aged 70; died, August 22, of cerebral hemorrhage.

George Holcomb Barber ⊕ Medical Director, Rear Admiral, U. S. Navy, San Francisco; Medical Department of Columbia College, New York, 1888; appointed assistant surgeon, in 1889, and rear admiral in 1917; aged 61; died, August 23.

F. S. Packard, Norlina, N. C.; Medical School of Maine, Portland, 1887; member of the Medical Society of the State of North Carolina; aged 65; died, August 10, at the Johns Hopkins Hospital, Baltimore, following an operation.

Robert Emmet Ledbetter ⊕ Medical Inspector, Commander, U. S. Navy, retired, Annapolis, Md.; University of Pennsylvania School of Medicine, Philadelphia, 1899; was commissioned in the Navy in 1900; aged 49; died, May 4.

James Hamilton Todd, Oakland, Calif.; Cooper Medical College, San Francisco, 1883; member of the California Medical Association; aged 80; died, June 23, at Piedmont, of arteriosclerosis and chronic interstitial nephritis.

Robert L. Armistead, Jefferson, Texas; University of Georgia Medical Department, Augusta, 1886; member of the State Medical Association of Texas; aged 66; died, July 3, at the Kahn Hospital, Marshall, of pneumonia.

John Bernard Halligan, North Emporia, Va.; Medical College of Virginia, Richmond, 1898; member of the Medical Society of the State of Virginia; served during the World War; aged 48; died, August 15, at Petersburg.

Alvin Lucien Light ⊕ Dayton, Ohio; Miami Medical College, Cincinnati, 1900; formerly health officer of Dayton; at one time on the staff of St. Elizabeth's Hospital; aged 53; died, August 21, of heart disease.

Benjamin D. Woodson, Poteau, Okla.; Memphis Hospital Medical College, 1890; member of the Oklahoma State Medical Association; aged 58; died recently, at a Forth Smith (Ark.) Hospital, of appendicitis.

Ernest Asa French, Plainview, Minn.; University of Minnesota Medical School, Minneapolis, 1903; member of the Minnesota State Medical Association; aged 48; died, August 17, of appendicitis.

John Herbert Franklin ⊕ Springvalley, Ill.; Rush Medical College, Chicago, 1892; member of the Western Surgical Association; on the staff of St. Margaret's Hospital; aged 58; died suddenly, August 27.

C. Vernon Fisher, Orange City, Iowa; State University of Iowa College of Medicine, Iowa City, 1919; member of the Iowa State Medical Society; aged 31; died, July 5, of pulmonary tuberculosis.

George Martin, Conemaugh, Pa.; Jefferson Medical College of Philadelphia, 1885; member of the Medical Society of the State of Pennsylvania; aged 67; died, August 13, of arteriosclerosis and nephritis.

Charles Joseph Hahn, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1900; member of the city board of health; aged 60; died, August 23, of chronic nephritis.

William Cloyd Jasper, Waynesburg, Ky.; Medical College of Ohio, Cincinnati, 1889; aged 64; was killed, August 23, when the automobile in which he was driving was struck by a train.

Arthur Fitts Wheat ⊕ Manchester, N. H.; Medical School of Harvard University, Boston, 1893; member of the Radiological Society of North America; aged 55; died, August 11.

Dennis George Callahan, Brooklyn; Long Island College Hospital, Brooklyn, 1903; member of the Medical Society of the State of New York; aged 52; died, August 8.

Milton Henry DeMand ⊕ Haven, Kan.; University of Kansas School of Medicine, Rosedale, 1912; aged 42; died, July 29, at a hospital in Wichita, of pneumonia.

Noah D. Myers, Decatur, Ill.; Medical College of Ohio, Cincinnati, 1872; member of the Illinois State Medical Society; aged 83; died, August 5, of senility.

Thomas Bryan Hall, Marshall, Mo.; Missouri Medical College, St. Louis, 1881; member of the Missouri State Medical Association; aged 68; died, August 4.

William Ellsworth Corbin, Washington, D. C.; Howard University School of Medicine, Washington, 1888; aged 64; died, August 12, of cerebral hemorrhage.

Johnson Armstrong, Tacoma, Wash.; Rush Medical College, Chicago, 1880; member of the Washington State Medical Association; aged 74; died, August 11.

Milford D. Brooks, Kansas City, Mo.; Meharry Medical College, Nashville, 1918; aged 32; died, August 18, at the Wheatley Hospital, of appendicitis.

Dennis G. Graham, Leslie, Mo.; University College of Medicine, Richmond, 1900; also a druggist; aged 58; died, August 19, at Schenectady, N. Y.

Alfred Henry Quessy ⊕ Fitchburg, Mass.; College of Physicians and Surgeons, Baltimore, 1902; aged 50; died, August 26, at the Carney Hospital, Boston.

George J. Fanning, Portland, Ore.; Willamette University Medical Department, Salem, 1891; aged 57; died, June 29, of a self-inflicted bullet wound.

Wilbur Fiske Hanson, Los Angeles; Rush Medical College, Chicago, 1885; aged 81; died, August 2, of injuries received in an automobile accident.

Ellietson H. Rogers ⊕ Stevens Point, Wis.; Eclectic Medical Institute, Cincinnati, 1889; aged 60; was killed, August 30, in an automobile accident.

Cincinnati Lafayette McCallum, Mason, Texas; Kentucky School of Medicine, Louisville, 1888; aged 63; died, June 27, of chronic myocarditis.

William H. Faulkner, Walden, N. Y.; New York Homeopathic Medical College, 1881; aged 65; died, March 6, of cerebral hemorrhage.

Alexander Hamilton Clements, Brooklyn; Long Island College Hospital, Brooklyn, 1896; aged 59; died recently, at London, England.

David Edwin Fitzgerald, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1894; aged 78; died, August 16.

John Samuel Forsen ⊕ St. Joseph, Mo.; Ensworth Medical College, St. Joseph, 1910; aged 41; died, August 14, at St. Louis.

Max Carl Groppner, Boston (licensed, Massachusetts, 1900); aged 65; died suddenly, August 7, of organic heart disease.

Henry W. Wilcox, Jr., Deposit, N. Y.; Baltimore Medical College, 1891; aged 57; died, August 7, of carcinoma of the throat.

William Francisco Lee, Humboldt, Kan.; College of Physicians and Surgeons, Keokuk, 1875; aged 76; died recently.

Emma L. Boice Hays, Toledo, Ohio; Cleveland University of Medicine and Surgery, 1882; aged 68; died, August 23.

Josiah Young, Monowi, Neb.; Eclectic Medical Institute, Cincinnati, 1881; aged 75; died, July 11, of heart disease.

The Propaganda for Reform

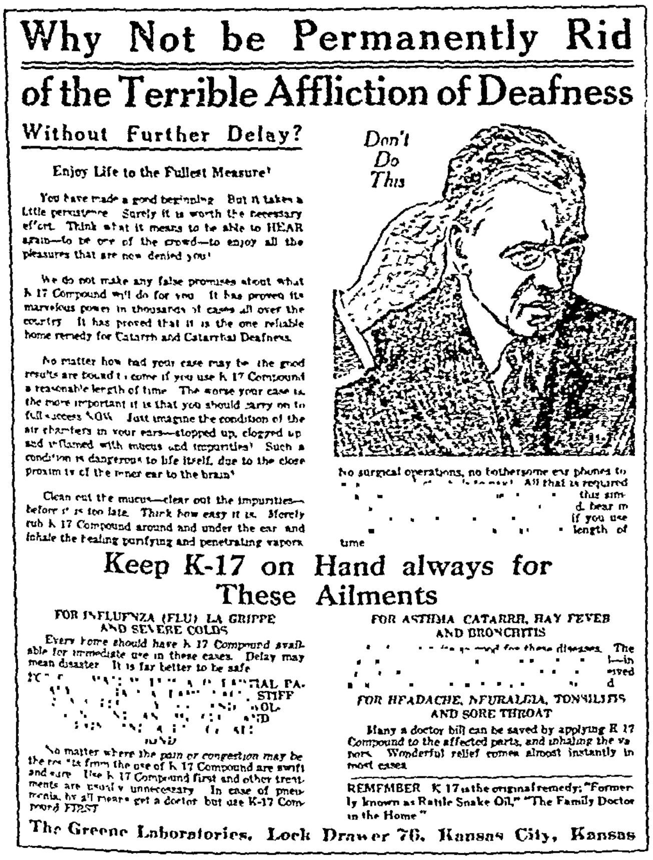
IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

K-17 OR RATTLESNAKE OIL

Another Fraudulent Deafness Cure Debarred from the Mails

Readers of this department of THE JOURNAL will remember that, in the issue of February 27, 1926, there was discussed the action of the federal authorities against a syndicate of frauds run by three men, Ward H. Webb, W. W. Burgess, and Linn D. Johnson, all of Kansas City, Mo.

One of the numerous frauds exploited by this group went by the trade name of the "Dale Laboratories." The product sold was known as "Virex," an alleged cure for deafness. It *consisted essentially of a mixture containing oils of wintergreen*, eucalyptus, camphor, mustard and neatsfoot with benzol. It was brought out in THE JOURNAL article that Virex was first known as "Rattlesnake Oil" and later as "K-17" and had been exploited by a mail-order quack, one Cooley H. Greene. Greene, it seems, placed his advertising through an agency that was operated by the same quacks that conducted the Dale Laboratories. Getting behind in his payments, the Burgess-Johnson-Webb trio entered into an arrangement with Greene whereby they should put out a similar product under the name Virex. This they did, appropriating the testimonials that Greene had accumulated for K-17 and Rattlesnake Oil. On February 11, 1926, the Postmaster General issued a fraud order against the Dale Laboratories, and Kansas City papers of April 29, 1926, reported that the federal grand jury had returned indictments against Burgess, Johnson and Webb.


Don't
Do
This

Why Not be Permanently Rid of the Terrible Affliction of Deafness Without Further Delay?

Enjoy Life to the Fullest Measure!

You have made a good beginning. But it takes a little persistence. Surely it is worth the necessary effort. Think what it means to be able to HEAR again—to be one of the crowd—to enjoy all the pleasures that are now denied you!

We do not make any false promises about what K 17 Compound will do for you. It has proven its marvelous power in thousands of cases all over the country. It has proved that it is the one reliable home remedy for Catarrh and Catarrhal Deafness.

No matter how bad your case may be, the good results are bound to come if you use K 17 Compound a reasonable length of time. The worse your case is, the more important it is that you should carry on to full success NOW. Just imagine the condition of the air chambers in your ears—stopped up, clogged up and inflamed with mucus and impurities! Such a condition is dangerous to life itself, due to the close proximity of the inner ear to the brain!

Clean out the mucus—clear out the impurities—before it is too late. Think how easy it is. Merely rub K 17 Compound around and under the ear and inhale the healing purifying and penetrating vapors.

No surgical operations, no bothersome ear phones to [illegible] All that is required [illegible] this sim[illegible]d. bear in [illegible] if you use [illegible] length of time

Keep K-17 on Hand always for These Ailments

FOR INFLUENZA (FLU) LA GRIPPE AND SEVERE COLDS

Every home should have K 17 Compound available for immediate use in these cases. Delay may mean disaster. It is far better to be safe [illegible] TIAL PA[illegible] STIFF [illegible] OL[illegible] AND [illegible]

No matter where the *pain or congestion may be* the results from the use of K 17 Compound are swift and sure. Use K 17 Compound first and other treatments are usually unnecessary. In case of pneumonia, by all means get a doctor but use K-17 Compound FIRST.

FOR ASTHMA CATARRH, HAY FEVER AND BRONCHITIS

[illegible] good for these diseases. The [illegible]—in [illegible]

FOR HEADACHE, NEURALGIA, TONSILITIS AND SORE THROAT

Many a doctor bill can be saved by applying K 17 *Compound to the affected parts, and inhaling the vapors.* Wonderful relief comes almost instantly in most cases.

REMEMBER K 17 is the original remedy; "Formerly known as Rattle Snake Oil," "The Family Doctor in the Home."

The Greene Laboratories, Lock Drawer 76, Kansas City, Kansas

Now the government has acted in the case of the original fraud that was exploited by Cooley H. Greene under the trade name "Greene Laboratories."

The government's case, brought out in the memorandum of the solicitor of the Post Office Department in his recommendation to the Postmaster General that a fraud order be issued, divulges few facts that the readers of THE JOURNAL are not already familiar with. The memorandum states that the Greene Laboratories (which were not laboratories at all) was a trade name adopted by *Cooley H. Greene and his wife Rebecca, and the business consisted in the advertising* and sale through the mails of an alleged cure for deafness called K-17, *formerly known as Rattlesnake* Oil. The stuff was manufactured by George A. Breon of Kansas City. This, presumably, is the same George A. Breon that comes to the medical profession in the guise of a manufacturer of alleged reputable pharmaceutical products. Breon's connection with other mail-order medical frauds has been brought out at different times.

The evidence showed that Greene filled about one hundred orders a day and his gross receipts from this fraud were between $75,000 and $100,000 annually. Greene had no medical training. He had formerly peddled his remedy about the country and when engaged in that business made use of snakes and snake skins to attract purchasers. This was at the time he was calling his humbug Rattlesnake Oil, although, of course, it never contained any oil of snakes; not that it would have had any special virtue had it done so.

The solicitor's memorandum states that the usual follow-up procedure on Greene's part was to state in the original letter that the price was $5 *for a treatment, coming down by easy stages until he reached* $2.50.

On April 3, 1926, a fraud order was issued debarring from the use of the *mails the Greene Laboratories and C. H.* Greene.

Correspondence

BENIGN OR NONMALIGNANT TUMORS

To the Editor:—It is time to discard the old fashioned and misleading terms of benign or benignant in speaking of neoplasms. The word nonmalignant or, possibly, innocent could well be substituted.

An abnormal growth may be *innocent* or *nonmalignant* at a certain stage of its presence; but it is the modern tendency to regard all new growths as possibly malignant until they have been removed and histologically proved otherwise.

In any case, an expression describing a morbid condition as "of good influence" should not be permitted in scientific English.

HOWARD LILIENTHAL, M.D., New York.

ELEVATORS FOR CHILDREN'S SCHOOLS

To the Editor:—Of all the public buildings in New York, the public elementary schools as well as *high schools* are being constructed still without any elevator facilities for the *children. Some of these buildings are four and five stories* high, necessitating the climbing of stairs, which is harmful *even for the normal children and certainly* for those with potential or certain cardiac defects, as well as for those who *suffer from anemia, malnutrition, and the like.*

I have written recently to the superintendent of *schools and he replied that it was a surprise to him that any physician* would suddenly begin to consider this aspect of the situation *when for years doctors did not object to children climbing* stairs.

It is my conviction that stress and strain involve effects on the heart and arteries the full measure of which we have not yet apprehended. *It is certain that in adults coronary changes and arteriosclerosis are consequent effects.* In children, a large number become dyspneic after climbing stairs, and eventually a semester at school produces untoward effects.

I have endeavored to proclaim the need of elevators for children in the public schools, but unless some concerted medical interest is lent to the subject, the situation will be ignored by politicians who are not acquainted with the full importance of the matter.

Morris H. Kahn, M.D., New York.

SMALLPOX IN UTERO

To the Editor:—Mrs. W., aged 26, a quintipara, had typical smallpox, having been vaccinated six days before with success, taking at the time she had the smallpox. Seven days after the pustule stage and before she had thoroughly shed all the scabs, I delivered her of a normal baby boy weighing 7½ pounds (3.4 Kg.). The baby had a well developed case of smallpox with a very few pocks just forming, a few in the pustule stage, and the remainder in the scab stage, which was shed almost entirely within twenty-four hours. Baby and mother recovered nicely with the exception that the baby had one pustule in its eye which completely destroyed it.

Lee O. Greene, M.D., Pea Ridge, Ark.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

METAL INJECTIONS TO REENFORCE ACTION OF INSULIN

To the Editor:—Is there any literature on treatment with nickel and cobalt, mentioned in the enclosed clipping as a means to reenforce the action of insulin in diabetes?

F. P. Silvernale, M.D., Elmore, Minn.

Answer.—The press clipping is a cablegram from Paris referring to a communication presented at the Académie des sciences at Paris. The *Presse médicale* of July 21, 1926, p. 916, gives the society proceedings of the Académie at its meetings, June 14 and 28, and states that Drs. G. Bertrand and Mâchebœuf presented a report on research in regard to the presence of minute amounts of nickel and cobalt in the organism of man and animals and especially in the pancreas. They found that the substance extracted from the pancreas and utilized in diabetes—insulin—has a much more potent action in the presence of minute amounts of nickel and cobalt than when it is used alone. They add that we have in this a means to enhance the action of insulin. The society proceedings give no further details except that the research was done on dogs and rabbits.

DOSAGE OF DIRECT AND ALTERNATING CURRENTS

To the Editor:—Please give me, if possible, any accurate information that you may have regarding dangerous dosage of direct and alternating currents. I want this information in order that I may be able to classify men who are working as linesmen, or with electrical equipment.

E. W. Dales, M.D., Grand Rapids, Mich.

Answer.—It is no more possible to state definitely the maximum current, either direct or alternating, that may be passed through a human being without danger than it is to state definitely the maximum speed at which an automobile may strike a man without injuring him dangerously.

The maximum, so-called harmless, strength of current depends on the physical condition of the man shocked and also on the path taken by the current through his body. A man with a weak heart cannot stand so great an amperage as can a man with a sound heart; nor can a man stand so great an amperage through his heart or brain as he can, let us say, through two fingers of his hand.

There is a false belief held by many persons, electrical as well as lay, that voltage is that which kills. It is not; it is the current that flows as a result of this electric potential. The current depends not only on the voltage but also on the resistance between the contacts; a voltage of 110 volts, or even less, can send enough current through a man to kill him, if the resistance between the contacts is low enough. Often we hear of people being electrocuted while immersed in their bath. One line of the lighting circuit may become grounded to the socket of the lamp, and when the bather touches the socket to turn on the light, a current passes through him to the ground, the second contact being the water in which he is bathing and which makes an excellent contact.

We would suggest that our correspondent consult some insurance company concerning a classification such as he desires. However, insurance companies group all electrical workers in one class regardless of whether they work with low tension or high tension electricity.

INFANTILE UTERUS—TATTOOING—A. M. A. EMBLEM

To the Editor:—1. A woman, aged 33, married, weighing 185 pounds (84 Kg.), complains of headache. She began to menstruate at 14, and ceased at 18. She has never been pregnant. She has had a thyroidectomy. I have given her ovarian residue now for two weeks with the result that the headaches are less and she has a feeling of weight in the pelvis. What can I reasonably expect in the restoration of the menses? Would there be contraindications to her becoming pregnant, with atrophic or infantile uterus? She desires children. 2. A man with extensive tattooing of nine years' standing came to me recently. On his arm a design in which green pigment had been used has become swollen and painful. Places that had broken down seem to heal after the pigment had been discharged from the ulcers; others are raised and hard, and have the appearance of blisters. What could be the cause of the trouble after so many years with no trouble? What would be a suggestive treatment? 3. I am not as yet a member of the American Medical Association. Could I secure the official A. M. A. auto insignia, radiator style? Please omit my name.

M.D., Washington.

Answer.—1. Regarding both amenorrhea and fertility, the outlook for obese patients with gross disturbances in the endocrine system is generally unfavorable. The longer the amenorrhea, the worse the prognosis; hence in the case cited the outlook is bad. If the menses can be restored, the chances for conception are improved. An attempt may be made to bring on menstruation by the administration of thyroid extract or iodine, ovarian and pituitary preparations; but the results are usually not encouraging. More recently, patients with amenorrhea and sterility have been successfully treated for both conditions with repeated, small doses of the roentgen ray. However, this treatment should be carried out only by an experienced roentgenologist.

There are no contraindications to pregnancy in a patient with an infantile uterus. Most patients with infantile uteri are sterile; but one should be cautious about telling a woman she can never have a baby, for even a decidedly undersized uterus may grow and carry a fetus to term.

2. It is impossible to state whether or not the tattooing is directly responsible for the present condition. It might be necessary to consult some one with special knowledge of diseases of the skin.

3. The auto insignia is sold only to members of the American Medical Association.

TEETHING AGE

To the Editor:—My baby is now 14 months old and weighs 10 Kg. Delivery was normal. It is breast-fed, bright and healthy, sleeps well and looks normal, but so far has not cut any teeth. Present feedings include: 9 a. m., milk; 12 (noon), noodle, meat and vegetable soup; 3 p. m., breast feeding and glass of milk; 7 p. m., cereal with an egg yolk; 10 p. m., breast feeding; plenty of orange juice. I have lately prescribed a calcium glycerophosphate preparation. Can you offer any suggestions? Is such delayed teething common? Please omit my name.

M. A., M.D., Valencia, Spain.

Answer.—Most babies begin cutting the teeth at about the sixth month. There is, however, a wide variance in respect to time. It is not unusual to find teeth erupting as early as the second month or as late as the twelfth. In the majority of cases, a check up of the family history will disclose an apparent hereditary influence. Early rachitis is usually accompanied by late dentition. In an occasional case the delay in cutting can be accounted for by the inability of the teeth to force their way through what appears to be a thickened gum tissue. In such cases, forceful massage of the gums is helpful, although, in extreme cases, lancing is indicated. The influence of a corrected diet seems to offer no direct benefit other than to the general welfare of the baby. Calcium salts apparently are most helpful (if at all) to dentition when given in organic combinations. No doubt, the baby will soon have teeth.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 9-10. Sec., Dr. James W. Walker, Fayetteville.

ARIZONA: Phoenix, Oct. 5. Sec., Dr. W. O. Sweek, Phoenix.

CALIFORNIA: Sacramento, Oct. 18-21. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, Oct. 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: State Board of Healing Arts, New Haven, Oct. 9. Prerequisite to license examinations. Box 1895, Yale Station, New Haven. Medical Examining Board, Nov. 9-10. Sec., Dr. Robert L. Rowley, 79 Elm St., Hartford. Homeo. Medical Examining Board, Nov. 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Oct. 12. Sec., Dr. Edgar P. Copeland, Suite 110, 1801 Eye Street, Washington.

FLORIDA: Tallahassee, Oct. 12-13. Sec., Dr. William M. Rowlett, Box 603, Tampa.

GEORGIA: Atlanta, Oct. 12-14. Sec., Dr. Luke Robinson, Covington.

HAWAII: Honolulu, Oct. 11-14. Sec., Dr. A. L. Davis, 1254 Emma St., Honolulu.

IDAHO: Boise, Oct. 5. Commissioner of Law Enforcement, Mr. F. A. Jeter, Boise.

ILLINOIS: Chicago, Oct. 5-7. Supt., Regis. and Education, Mr. V. C. Michels, Springfield, Ill.

IOWA: Des Moines, Nov. 16-18. Commissioner, Dept. of Health, Dr. Henry Albert, Des Moines.

KANSAS: Topeka, Oct. 12. Sec., Dr. Albert S. Ross, Sabetha.

MAINE: Portland, Nov. 9-10. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 9-11. Sec., Dr. Frank M. Vaughan, Room 144, State House, Boston.

MICHIGAN: Lansing, Oct. 12-14. Sec., Dr. Guy L. Connor, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, Oct. 5-7. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

MONTANA: Helena, Oct. 5-7. Sec., Dr. S. A. Cooney, Helena.

NEVADA: Carson City, Nov. 1. Sec., Dr. Simon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 19-20. Sec., Dr. Charles B. Kelley, Trenton.

NEW MEXICO: Santa Fe, Oct. 11-12. Sec., Dr. W. T. Joyner, Roswell.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 20-23. Chief, Professional Exams. Bureau, Mr. Herbert J. Hamilton, State Education Building, Albany.

RHODE ISLAND: Providence, Oct. 7-8. Sec., Dr. B. U. Richards, Providence.

SOUTH CAROLINA: Columbia, Nov. 9. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

UTAH: Salt Lake City, Oct. 5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

WYOMING: Cheyenne, Oct. 4-6. Sec., Dr. G. M. Anderson, Cheyenne.

VACANCIES IN MEDICAL SCHOOLS

At the time we go to press, the medical schools named in the following list report vacancies in the four classes as follows:

Name of School	1st Year	2d Year	3d Year	4th Year
University of Arkansas School of Med...	5	..	10	..
Stanford University School of Med......	..	5	1	12
University of California Medical School..	..	..	14	9
University of Colorado School of Med...	..	2	10	12
George Washington Univ. Med. School..	..	3	3	..
Emory University School of Medicine....	2	20	..	..
University of Kansas School of Med....	..	..	2	5
Harvard University Medical School......	..	9	..	..
St. Louis University School of Med....	..	..	5	..
University of Missouri School of Med..	..	6	..	..
Dartmouth Medical School.............	10	8	..	..
Western Reserve Univ. School of Med..	..	6	..	..
Woman's Med. College of Pennsylvania..	6	6	15	16
University of So. Dakota Sch. of Med..	..	6	..	..
University of Tennessee School of Med..	..	..	6	10

This list should be called to the attention of any properly qualified students who thus far have failed to secure enrolment in some class A medical school. Four separate bulletins containing information in regard to these vacancies have been sent to deans of all medical schools in order that properly qualified students applying to them since their own enrolments have been filled may be directed to these institutions.

Florida June Examination

Dr. William M. Rowlett, secretary of the Florida Board of Medical Examiners, reports the written examination held at St. Petersburg, June 14-15, 1926. The examination covered 10 subjects and included 100 questions. Of the 170 candidates examined, 132 passed and 38 failed. The following colleges were represented:

College PASSED	Year Grad.	Per Cent
Yale University School of Medicine	(1921)	77.2
Howard University School of Medicine	(1925),	77.9, 83.5
Atlanta College of Physicians and Surgeons	(1906)	75
Atlanta Medical College	(1896)	78.9
Atlanta School of Medicine	(1910) 81, (1911)	78.9
Emory University School of Medicine	(1905) 83.3, (1925)	79.9, (1926) 77, 77, 78.4, 79.8, 80.1, 82.9, 83.5, 84.7, 86.7, 87.6, 88.9
University of Georgia Medical Department	(1913)	78.3, (1924) 78.5, 89.5, (1925) 75, 75.9, 77.4, (1926) 79.1
Bennett College of Eclectic Med. and Surg., Chicago	(1906)	83.5
Chicago College of Medicine and Surgery	(1913)	82
Chicago Hospital College of Medicine	(1918)	78.8
Northwestern University Medical School	(1894) 85.9, (1911)	83.7, (1924) 86
Rush Medical College	(1884) 76.7, (1891) 76.3, (1897)	78.2, (1903) 78.7, (1924) 90.6
University of Illinois College of Med	(1909) 78.5, (1915)	79.4, 81.3
Indiana University School of Medicine	(1925)	81.6
State College of Physicians and Surgeons, Indianapolis	(1907)	75
Hospital College of Medicine, Louisville	(1906)	81.4
University of Louisville School of Med	(1923) 84.7, (1924)	80
Tulane University of Louisiana School of Medicine	(1915)	81.5, (1920), 77.1, 79, (1921) 86.4, (1922) 82.8, (1924) 82.9, (1925) 81.4, (1926) 76.8, 83.5, 83.6, 84.8, 87.9
Johns Hopkins University Medical Department	(1916)	87.1, (1918) 83.2, (1919) 82.3, (1920) 80.7, (1926) 86.5
University of Maryland School of Medicine	(1891)	75, (1906) 76.8, (1914) 78.2, (1923) 76.3
Harvard University	(1922)	90.6
Tufts College Medical School	(1908)	78.4
University of Michigan Medical School	(1923) 87.5, (1924)	79.7
University of Michigan Homeo. Medical School	(1898)	76.8
Barnes Medical College, St. Louis	(1908)	76.4
St. Louis College of Physicians and Surgs	(1890) 76.7, (1912)	75
St. Louis University School of Medicine	(1924)	85.2, 86.2
University Medical College of Kansas City	(1906)	76.2
Washington University School of Med	(1922) 87.1, (1926)	77.6
Albany Medical College	(1908)	81.8
Columbia University College of Physicians and Surgs	(1908)	77.3, (1921) 86.6
University of Buffalo Department of Med	(1892) 82, (1923)	84.8
Medical College of North Carolina	(1906)	75,
Eclectic Medical College, Cincinnati	(1923)	77.5, 82.2
University of Cincinnati College of Med	(1921) 84.6, (1922)	85.3
University of Oklahoma School of Medicine	(1925)	83.9
Hahnemann Medical College and Hosp. of Philadelphia	(1925)	76.1
Jefferson Medical College of Philadelphia	(1917) 82.2, (1926)	85.1
University of Pennsylvania School of Medicine	(1897)	75, (1904) 78.6, (1921) 75, 83.6, (1924) 87.3
University of Pittsburgh School of Medicine	(1908)	85, (1909) 81.2, (1924) 84.1
Medical College of the State of South Carolina	(1925)	81.9, 83.1, (1926) 78.5
University of Nashville Medical Department	(1906)	75
University of Tennessee College of Medicine	(1907)	75.3
Vanderbilt University School of Medicine	(1919) 85.7, (1920)	77.7, (1924) 79.5, 87.3, (1925) 85.9, (1926) 77.6, 80.5, 86.6
Medical College of Virginia	(1908) 83.8, (1914) 79, (1925)	88.1, (1926) 85.9
University College of Medicine, Richmond	(1907)	75, 75
University of Virginia Department of Medicine	(1902)	77.6, (1903) 77.3, 80.3, (1924) 84.2
McGill University Faculty of Medicine	(1923) 85.5, (1924)	84.1
Queens University Faculty of Medicine	(1915) 86.4, (1916)	75.3
University of Manitoba Faculty of Med	(1916) 82.1, (1918)	82.1
University of Brussels, Belgium	(1926)*	83.4

College FAILED	Year Grad.	Per Cent
Birmingham Medical College	(1914)	63.5
University of Alabama School of Medicine	(1884)	74
Howard University School of Medicine	(1910)	67.4
Atlanta College of Physicians and Surgeons	(1899)	73.5
Atlanta School of Medicine	(1894)	71.5
Emory University School of Medicine	(1911)	72
Hospital Medical College, Eclectic, Atlanta	(1911)	44.9
University of Georgia Medical Dept	(1924) 74.6, (1925)	73.1
College of Medicine and Surgery, Physio-Med., Chicago	(1902)	55.7
Northwestern University Medical School	(1909)	71
Rush Medical College	(1880)	71.6
Indiana University School of Medicine	(1914)	72.6
Kentucky School of Medicine	(1892)	59.9
College of Physicians and Surgeons, Baltimore	(1892)	66.4
University of Maryland School of Medicine	(1906)	71.5
Boston University College of Medicine	(1912)	73.2
Tufts College Medical School	(1919)	67
St. Louis University School of Medicine	(1906)	71.1
Washington University School of Medicine	(1905)	71.6
Dartmouth Medical School	(1899)	0
Cleveland-Pulte Medical College	(1911)	70.1
Jefferson Medical College of Philadelphia	(1888)	56.3
Medico-Chirurgical College of Philadelphia	(1899)	63.5
University of Pennsylvania School of Medicine	(1906)	70.5
Meharry Medical College	(1914) 52.6, (1924)	65.9
University of Nashville Medical Department	(1906)	67
University of Tennessee College of Med	(1924) 68.1, (1925)	70.7
University of the South Medical Department, Sewanee	(1900)	49.7, (1908) 66.6
Vanderbilt University School of Medicine	(1883) 71.5, (1901)	70.2
University of Vermont College of Med	(1882) 68.1, (1909)	73
University of Havana, Cuba	(1923)* 68.3, (1925)*	61.7

* Verification of graduation in process.

Book Notices

The Principles of Anatomic Illustration Before Vesalius: An Inquiry into the Rationale of Artistic Anatomy. By Fielding H. Garrison, A.B., M.D. Cloth. Price, $2.50 net. Pp. 58, with illustrations. New York: Paul B. Hoeber, Inc., 1926.

With the charm that pervades all the historical writings of Dr. Garrison, this volume presents a philosophic consideration of the relationship of modern anatomy to the art and science of the middle ages. Dr. Garrison feels that we have plenty of *vernunft*, but that we lack greatly in *verstand*. The prime factor of importance in illustration before Vesalius was first hand observation of external configuration. Dr. Garrison presents simple facts concerning anatomic illustration, accompanying them with observations based on his extensive reading, that strike like gleams of color in the midst of these musty records. The book itself is beautifully printed like the other numbers of this series, and handsomely illustrated with numerous especially selected illustrations. The edition is limited and desirable.

Diseases of the Skin. By Richard L. Sutton, M.D., LL.D., F.R.S., Professor of Diseases of the Skin, University of Kansas School of Medicine. Sixth edition. Cloth. Price, $12. Pp. 1303, with 1158 illustrations. St. Louis: The C. V. Mosby Company, 1926.

The numerous editions of this handsomely printed and illustrated textbook on the diseases of the skin may be taken as an indication of the desire of the author and the publisher to keep the volume strictly up to date in its field. This is especially the case since the mechanical considerations involved in the revision and reprinting of a book of this scope are considerable. The new edition is marked by the elimination of much obsolete matter, a concrete presentation of the advances made in the diagnosis and treatment of syphilis, and the addition of sections on some of the more recently discovered disturbances of the skin, such as Fox-Fordyce disease, mycotic paronychia (Kingery-Thienes), congenital ectodermal aplasia, cheilitis, actinica chronica (Ayres), ulcus vulvae acutum, glossitis rhombica mediana, achromia parasitica, and the dermatologic aspect of rat-bite fever. Dr. Sutton points out that more than 800 references to current literature in this field have been consulted in the making of the revision and are included in the brief bibliographic summaries that follow each of the major topics discussed. The illustrations, always of great importance in a textbook on diseases of the skin, are here printed on a high quality of enameled paper.

Biological Relations of Optically Isomeric Substances. By Arthur R. Cushny, M.A., M.D., LL.D., Professor of Pharmacology and Materia Medica in the University of Edinburgh. Cloth. Price, $2. Pp. 80, with 4 illustrations. Baltimore: Williams & Wilkins Company, 1926.

Every pure substance has a definite composition and structure. And while a composition as complex as $C_6H_{12}O_6$ admits of considerable variation in the manner in which the component atoms may be linked together, each variation in structure is associated with a variation in the identity of the substance for which it is characteristic. When two asymmetrical substances differ only as does the right hand from the left in the correspondence of their structures, they are called optical isomers. They were at first thought to be identical in every chemical and physical property excepting in the direction which they rotate the plane of a beam of incident, polarized light. But optical isomers behave as identical compounds only in their reactions with substances of symmetrical structure. Protoplasm, predominatingly asymmetrical in its make-up, reacts in a quantitatively different fashion with one of a pair of optical isomers than with the other. It is with such quantitative differences in the physiologic action of optical isomers that this book has to deal. Some of the chapters are on the relation of enzymes and optically active bodies; the decomposition of isomers in living tissues; the pharmacologic action of optical isomers; general aspects of the pharmacologic action, and influence of configuration on pharmacologic action. The author brings out a clear connection between the actions of optical isomers in the test tube and in living tissue. "Optical isomers differ in their pharmacological action proper, just as they differ in their reactions with enzymes or with substances of known structures such as alkaloids or acids. And they exhibit here also the same variability; for example, among the hyoscyamines and hyoscines, the laevo-rotary forms act about fifteen times as strongly as the dextro-rotary in certain organs in which they are said to exert 'a specific action,' while in other positions, such as in striated muscle or the nerve-ends supplying it, the isomers are equally and only feebly toxic." Conclusions are drawn only from quantitative relations based on measurements of the intensity of a definite action on a given tissue. Students of practical medicine will find the book easy to read, enjoyable, and highly informative.

Politzer's Text-Book of the Diseases of the Ear. For Students and Practitioners. Revised by Milton J. Ballin, M.D., Ph.B., Attending Oto-Rhino-Laryngologist, Bronx Hospital, New York City. Sixth edition. Cloth. Price, $10. Pp. 776, with 302 illustrations. Philadelphia: Lea & Febiger, 1926.

This textbook contains a vast amount of solid information based on the enormous clinical observations of a master. Politzer, "who saw everything," leaves in this book a mass of authoritative material which can never grow old. The translator has tried to keep as much as possible the original text; a worthy effort to preserve it, as a sort of monument, to the great teacher. To do this, however, a price has been paid in that the literature of the last twenty years has received little attention; for the student who wishes a point of view abreast of the times, this is a matter for regret.

Lehrbuch der Gynäkologie für Studierende und Aerzte. Von Dr. Med. Robert Schröder, Ord. Professor für Geburtshilfe und Gynäkologie und Direktor der Universitäts-Frauenklinik in Kiel. Second edition. Paper. Price, 35 marks. Pp. 725, with 333 illustrations. Leipsic: F. C. W. Vogel, 1926.

This edition, appearing four years after the first, with considerable new material, will be welcomed by students of gynecology as one of the most complete and practical works on the subject. The illustrations include many colored photomicrographs and drawings, and add greatly to the work. As with most German medical authors, one is struck by the absence of references to works of Americans. The work of Robert Frank is frequently quoted, but only a rare reference to other American authors is made. Schröder's treatment of the subject of menstruation and its disorders is monographic in its scope, though occupying only sixty-five pages. Endometriosis, the subject under such active discussion in this country, is hardly mentioned. The same may be said of the subject of pneumoperitoneum for gynecologic diagnosis, which he mentions for the demonstration of pelvic adhesions. The Rubin test he says is still on trial, and he emphasizes not so much its utilization as the dangers of injury to the endometrium and air emboli of the parametrium. The beautifully illustrated chapter on carcinoma of the uterus well summarizes the German literature on this subject, with a full discussion of methods of treatment and end results.

The White Spots of Epilepsy and Other Phases of the Disease. By Edward A. Tracy, M.D., School Physician, Boston Public Schools. Cloth. Price, $2.50. Pp. 129, with 12 illustrations. Boston: Richard T. Howard, 1926.

This booklet contains a collection of short articles and reprints of articles published in nonspecialist journals, all dealing with what the author considers an important objective sign of early epilepsy; namely, white spots. He finds them in epilepsy, and he believes that they aid greatly in the detection of that disease; indeed, he is firmly convinced that a knowledge of them and the epileptic vasomotor reactions is necessary for its accurate diagnosis. He thus describes the spots: "They are observable on the arm, the back of the hands, or the face; are chronic in location, and evidently caused by vasoconstriction; that is, the blood vessels of the skin contract locally and squeeze out their blood content, thus making the white spot." The author speaks of an incipient stage of epilepsy, without convulsive seizures, that quite frequently progresses unrecognized, with no diagnosis ventured until recurrent convulsions occur. It is in this phase of the disease that he finds the white spots helpful in diagnosis. His articles are mostly short papers reiterating his belief in the existence of white spots which he also terms "Tracy spots" in epilepsy, supported by a few photographic reproductions, which are not convincing. The same may be said of the few incomplete case histories with so-called cures. Though the author feels that he has made a real discovery, he fails to mention the name of one neurologist who has verified his observations.

Hydrogen Ion Concentration of the Blood in Health and Disease. By J. Harold Austin, Professor of Research Medicine, University of Pennsylvania, and Glenn E. Cullen, Professor of Biochemistry, Vanderbilt University Medical School. Cloth. Price, $2. Pp. 75, with 8 illustrations. Baltimore: Williams & Wilkins Company, 1926.

This aims to bring together "in concise form for the use of clinicians and workers in clinical laboratories" the most important knowledge relative to the clinical significance of variations in the hydrogen ion concentration of the blood. The first chapter introduces and develops the fundamental conceptions of p_H, buffer action, acid-base balance, and alkali reserve. The second and third chapters summarize the existing literature relative to the acid-base balance of normal plasma and of the plasma of persons suffering from diabetes, toxemia, shock and tetany. The final chapter contains directions for the determination of the hydrogen ion concentration. The book as a whole is admirably conceived, and the amount of material and bibliography presented make it a valuable reference handbook for workers in this field. It would, perhaps, be more useful had its subject matter been presented in a more critical and extended form.

Birth Control and the State. A Plea and a Forecast. By C. P. Blacker, M.C., M.A., M.R.C.S. Cloth. Price, $1. Pp. 87. New York: E. P. Dutton & Company, 1926.

This is one of the volumes in the "Today and Tomorrow" series. Although these volumes are small and are published to retail at a dollar each, many of them are fascinating contributions to the literature of man and his future. This little volume maintains the high standard of the series. It is a sort of primer of birth control. But to write a good primer requires a master; and Blacker lives up to that requirement. The first half of the book is devoted to a brief but illuminating summary of, first, the more serious arguments against birth control, and, then, of those for it. In thirty-eight small pages of 125 words each, the two sides of the argument are summarized. Any one who becomes familiar with these thirty-eight pages has before him a perspective of this highly important subject. The exposition has been done not by a propagandist, but by one who without bias frankly and intelligently sets forth the arguments on both sides. Then the author proceeds in forty-three pages to give his interpretation of the questions involved in the problem. These questions are no less important than the future of the human race. Nowhere else within our knowledge are some of present civilization's problems considered more succinctly or with more stimulating suggestiveness. He points out great national problems which, students of the world's future recognize, threaten Western civilization. The points he makes are not those of the fanatic or the alarmist, but of a man of vision and of comprehension of the present great national problems. It is a fascinating chapter. The thoughtful man could hardly begin reading it and bear interruption without impatience. The whole book can easily be read in an evening and, after the first pages giving the elementary facts, it compels interest. Surely such a book should appeal to medical men of intelligence and imagination. Birth control is a biologic topic; it is a problem of medicine; and Blacker appeals to the medical profession to give the subject its attention and to take wise action regarding it. Medical men, as a rule, are not conversant with the terms of the problem; many of them are inclined to regard it as a sex problem, chiefly interesting to fanatics and of no particular importance. They owe it to themselves to disabuse their minds of this superficial notion. Birth control comes within the domain of the great problems of mankind, and medicine has a responsibility in the problem which it should assume. Physicians should familiarize themselves with its terms. One could hardly do this more readily than from this little book, and certainly one could not do it in a more interesting way.

Leitfaden der neurologischen Diagnostik: Eine Differentialdiagnose aus dem führenden Symptom für praktische Aerzte und Studierende. Von Dr. Kurt Singer, Nervenarzt in Berlin. Second edition. Paper. Price, 9 marks. Pp. 246, with 34 illustrations. Berlin: Urban & Schwarzenberg, 1926.

This excellent little book is neither a compend nor a textbook. It contains sufficient information concerning anatomic and physiologic facts to remove it from the former category entirely and to make the work of diagnosis both logical and educational. It presents the symptomatology of nervous diseases in a grouping that shows the path to making a differential diagnosis with the chief symptom presented by the patient as the starting point. The first chapters deal with the general manifestations of peripheral and central lesions; all others discuss such symptoms as muscular atrophy, changes in reflexes, disturbances in gait, vertigo, tremor and headache. In this edition, the book has been largely rewritten and brought down to date. The work is well done and worth while; the illustrations are clear and simple, and there is an excellent index. The book should prove of great value to the internist and the general practitioner, for whom it was designed.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

Histological Technique: For Normal Tissues, Morbid Changes and the Identification of Parasites. By H. M. Carleton, M.A., B.Sc., D.Phil., University Lecturer in Histology, Oxford. Chapters VII. and VIII. in collaboration with Frederic Haynes, B.A., Demonstrator of Histology. Cloth. Price, 16 shillings. Pp. 398, with illustrations. New York: Oxford University Press, 1926.

A beautifully printed, well organized guide to laboratory methods in microscopic anatomy.

Surgery of Neoplastic Diseases by Electrothermic Methods. By George A. Wyeth, M.D. Preface by Howard A. Kelly, M.D. Cloth. Price, $7.50 net. Pp. 298, with 137 illustrations. New York: Paul B. Hoeber, Inc., 1926.

Complete outline of the use of electric methods in treatment of tumors, referring to the "endotherm knife" and similar devices.

The Surgery of Gastro-Duodenal Ulceration. By Charles A. Pannett, B.Sc., M.D., F.R.C.S., Professor of Surgery in the University of London. Cloth. Price, $3.25. Pp. 154, with 55 illustrations. New York: Oxford University Press, 1926.

Monograph with due emphasis on recent periodical literature and the technic of various operative measures.

Radiotherapy in Relation to General Medicine. By Francis Hernaman-Johnson, M.D., Radiologist to the French Hospital, London. Cloth. Price, $1.75. Pp. 211. New York: Oxford University Press, 1926.

A handbook of general principles, well suited to the needs of the general practitioner.

Das autonome Nervensystem. Von Dr. Med. Erich Schilf, Privatdozent für Physiologie. Paper. Price, 16.50 marks. Pp. 207, with 25 illustrations. Leipsic: Georg Thieme, 1926.

Monographic compendium on autonomic system from physiologic point of view.

A Laboratory Manual for Elementary Zoölogy. By Libbie Henrietta Hyman, Department of Zoölogy, University of Chicago. Cloth. Price, $2.50. Pp. 182. Chicago: University of Chicago Press, 1926.

Guide to University of Chicago methods in teaching the elements of zoology.

Anafilaksija (Eksperimentiškieji tyrinejimai). Por E. o. prof. V. Lašas, Medicinos fakulteto Fiziologijos ir Fiziologines chemijos laboratorijos vedejas. Paper. Pp. 116, with illustrations. 1926.

The National Government and Public Health. By James A. Tobey, M.S., LL.B. The Institute for Government Research, studies in administration. Cloth. Price, $3. Pp. 423. Baltimore: Johns Hopkins Press, 1926.

An analysis of American governmental activities in the public health field.

Diseases of Children: A Short Introduction to Their Study. By Hector Charles Cameron, M.A., M.D., F.R.C.P., Physician and Physician-in-Charge of the Department for the Diseases of Children, Guy's Hospital. Cloth. Price, $1.75. Pp. 199. New York: Oxford University Press, 1926.

Much common sense and sound advice in a small compass.

Brain and Heart: Lectures on Physiology. By Giulio Fano, of The Royal University of Rome. Translated by Helen Ingleby. With a Foreword by Prof. E. H. Starling, C.M.G., M.D., D.Sc., University College, London. Cloth. Price, $2.75. Pp. 142, with 19 illustrations. New York: Oxford University Press, 1926.

Observations of an Italian medical philosopher.

Normal Backwardness and Balance in Child Life. By George Dow Scott, A.B., B.S., M.D., Pediatrist to the New York Lutheran Hospital. Cloth. Price, $1.75. Pp. 132. Boston: Richard G. Badger, 1926.

Sound advice in mental hygiene and nutrition of the child.

Tafeln mit Umschlagfarben zum Nachweis von relativer Rot- und Grünsichtigkeit. Von Dr. med. Ernst Wölfflin, a o. Professor an der Universität Basel. Cloth. Pp. 8, with 8 plates. Leipsic: Georg Thieme, 1926.

Plates for determining red green color blindness.

Die operative Technik des Tierexperimentes. Von H. F. O. Haberland. Dr. Med., a. o. Professor fur Chirurgie an der Universitat Koln. Paper. Price, 28.50 marks. Pp. 336, with 300 illustrations. Berlin: Julius Springer, 1926.

Technic of experimentation on animals.

Stillings pseudo-isochromatische Tafeln zur Prüfung des Farbensinnes. Herausgegeben von Geheimrat Prof. Dr. E. Hertel, Direktor der Universitäts-Augenklinik in Leipzig. Seventeenth edition. Cloth. Price, 18 marks. Pp. 2, with 14 plates. Leipsic: Georg Thieme, 1926.

Plates for testing color vision.

Opium the Demon Flower. By Sara Graham-Mulhall. Cloth. Price, $2. Pp. 310. New York: Harold Vinal, 1926.

A popular presentation of the American situation in regard to drug addiction.

Studies in Intracranial Physiology and Surgery. The Third Circulation. The Hypophysis. The Gliomas. By Harvey Cushing, M.D. The Cameron Prize Lectures delivered at the University of Edinburgh, October 19, 20, 22, 1925. Cloth. Price, $3.25. Pp. 146, with 16 illustrations. New York: Oxford University Press, 1926.

The Learned and Scientific Publications of the University of Nebraska (1871-1926). Compiled by Jacob Henry Gable, Jr. Volume VI. Bibliographical Contributions from the University of Nebraska Library. Edited by Gilbert Harry Doane, Librarian. Paper. Pp. 130. Lincoln: The University of Nebraska, 1926.

Reports of the Committee upon the Physiology of Vision: Illumination and Visual Capacities. (A Review of Recent Literature.) Medical Research Council. Special Report Series, No. 104. By R. J. Lythgoe, M.A., B.Ch. Paper. Pp. 80. London: His Majesty's Stationery Office, 1926.

Small-Pox and Climate in India; Forecasting of Epidemics. By Sir Leonard Rogers, C.I.E., M.D., F.R.C.P. Medical Research Council. Special Report Series, No. 106. Paper. Pp. 22, with illustrations. London: His Majesty's Stationery Office, 1926.

Psychological Monographs: University of Iowa Studies in Psychology, Numbers 9 and 10. Volume XXXVI, Nos. 1 and 2. Edited by Carl E. Seashore. Paper. Pp. 262 and 114. Princeton, N. J.: *Psychological Review Company,* 1926.

The Rockefeller Foundation, a Review for 1925. By George E. Vincent, President of the Foundation. Paper. Pp. 59, with illustrations. New York: The Rockefeller Foundation, 1926.

Appendicite. Por Dott. Prof. F. Caneva Zanini, Docente in Medicina Operatoria presso la R. Universita di Milano. Paper. Pp. 96. Milan: Casa di Salute Caneva, 1926.

Opportunities for Clinical Study in Hospitals of New York City with Transportation Guide. Paper. Pp. 84. New York: New York Academy of Medicine, 1926.

L'Hérédité musicale. Par Docteur Louis Vezoux, de la Faculté de médecine de Paris. Paper. Pp. 279. Paris: E. le François, 1926.

Report of the Joint Select Committee to Consider Drug Addiction in Rhode Island. Paper. Pp. 14. Providence, 1926.

Nel XXV° Anno d'Insegnamento del Prof. Luigi Devoto, 1900-1925. Paper. Pp. 91. Milan, 1925.

Medicolegal

Heat Prostration Damage to Physical Structure of Body

(Texas Employers' Ins. Ass'n v. Moore et al. (Texas), 279 S. W. R. 516)

The Court of Civil Appeals of Texas, in affirming a judgment for the defendants in this suit instituted to set aside an award of the industrial accident board for the death of a pressman, says that the jury found that he died of heat prostration and that his death was directly and proximately caused by the conditions of the rooms in which he was working at the time of his death. The insurance association contended that the jury should have been required to find whether or not the death was the result of such an injury received in the course of his employment as "meant damage or harm to the physical structure of his body, or such disease or infection as naturally results therefrom." Is heat prostration, superinduced by such special and artificial conditions as here obtained, a damage or harm to the physical structure of the body, or such disease or infection as naturally results therefrom? If it is, the questions that the court asked imported the same thing as those the association wanted substituted, and there was no prejudicial error in choosing the one form of submission over the other. To ask this question seems to this court to answer it. The medical authorities tell us that heat stroke or prostration, which terms they quite generally use as interchangeable, is a condition of the body produced by great heat, and, if it is a resulting state of the body at all, the lay mind does not readily apprehend how it can be other than such a one as naturally flows from some damage or harm to its physical structure; in other words, an external cause or agency which, when applied thereto, produces such perceptible change in the body or its functions as suddenly to still forever the operation of its vital organs, as was the finding in this instance, necessarily inflicts an injury on its physical structure. So the jury's answers to the questions given elicited in effect the same facts as the association desired found, and the point urged constituted a distinction without a difference. Nor does the court agree with the contention that death resulting from heat stroke or heat prostration, as in this case, is not compensable under the terms of the employers' liability act of Texas because the death of one so caused is not the result of an injury, or personal injury, as defined in the act, but is caused by the act of God.

Insufficient Evidence Water Caused Typhoid

(Webber et ux. v. Pacific Power & Light Co. (Wash.), 242 Pac. R. 1104)

The Supreme Court of Washington, in reversing a judgment for $1,000 damages rendered in favor of the plaintiffs, husband and wife, on account of Mrs. Webber having been taken ill with typhoid, says that the plaintiffs' home was furnished water from a connection from one of the defendant's mains at a point approximately 400 feet from a dead end of the main where there was a fire hydrant. That hydrant was supposed to be opened from time to time to let the still or dead water escape. For present purposes the court assumes that the defendant neglected to cause the dead end of the main to be so flushed for a period of a month or more prior to Mrs. Webber's becoming sick, and that such flushing should have been done probably as often as once in every two weeks, in order to keep the water in the dead end reasonably pure. The physician who attended Mrs. Webber, while arriving at the conclusion that she might have become infected with typhoid bacteria from the use of the water from the defendant's main, yet testified that he never did satisfy himself about it. Moreover, he gave it as his opinion that the only other (three) cases of typhoid in the city from January to August were the result of causes other than the water furnished by the defendant. In July, a month after his wife was taken with the fever, Mr. Webber procured an empty bottle from a drug store and filled it with water from the faucet in their house, first letting the water run awhile, corked the bottle, sealed it, and sent it to the assistant bacteriologist at the state college, for analysis. The bottle was not packed in ice or in any manner protected looking to the preservation of its proper temperature in transit so as to have the water remain in the same condition, as to bacteria, during transit, and it was five days in transit, during the heat of summer. The assistant bacteriologist analyzed the water soon after its arrival, and found typhoid bacteria in it, but he refused to guarantee his report because of want of sanitary putting up of the water in a proper container and because of its delay in transmission. About two weeks after that sample was sent, Mr. Webber following the suggestion of the assistant bacteriologist, obtained proper sanitary containers, and, following directions, sent other samples of water from the faucet in their home to the state board of health, whose analyses of those samples failed to disclose the presence of any typhoid bacteria. Under these circumstances the supreme court feels constrained to hold that to allow the judgment in favor of the plaintiffs to stand would be simply to allow it to rest on pure conjecture and speculation. It could not be said with any degree of certainty—indeed, what evidence there was negatived the idea—that Mrs. Webber became infected with typhoid bacteria from the water used by her from the defendant's main. The possible impurities or stagnant nature of the water in the dead end manifestly, in the light of the undisputed evidence as to its nature, furnished no support whatever to the plaintiffs' right of recovery. This was but a case in which one of many causes might have resulted in Mrs. Webber becoming infected with typhoid bacteria.

Chiropractor Treated as Intruder into Profession

(Cummings v. State ex rel. Biggs, Solicitor (Ala.), 106 So. R. 852)

The Supreme Court of Alabama says that the state, by its solicitor of the twenty-first judicial circuit, instituted this proceeding against defendant Cummings. It was an action in the nature of a quo warranto, charging the defendant with intruding into the profession of treating diseases of human beings, which requires a license or certificate of authorization, which he did not obtain from the state board of medical examiners. This petition was filed by the solicitor under subdivision 1, section 9932, code of 1923, under written direction from the judge of the circuit, as is permitted by section 9933 of the code. A jury returned a verdict in favor of the state, and a judgment thereon excluding the defendant from practicing this profession is, on an appeal, affirmed.

That part of the Alabama statute applicable, under which the petitioner was proceeding, states: "When any person . . . intrudes into . . . any profession requiring a license or certificate or other legal authorization within this state." The treatment of diseases of human beings in Alabama is a profession, and this profession cannot be lawfully practiced by a person in the state without a proper license or certificate of qualification. The petition averred that the defendant intruded into the profession of treating or offering to treat diseases of human beings in Baldwin County, Alabama. This clearly showed the profession he was practicing; and it averred that he was an intruder therein; that a license or certificate of qualification to practice this profession from the state board of medical examiners was required, and that he had not obtained this certificate or license. This was sufficiently definite and certain, and the court did not err in overruling demurrers to the original petition.

However, by leave and under order of the court, the state, by its solicitor, amended the petition, so that there were in the amendment two disjunctive averments:

> Has intruded into the profession of treating or offering to treat diseases of human beings by a system of treatment known as the chiropractic system, or did treat or offer to treat diseases of human beings as a chiropractor, a profession requiring a license or certificate.

But each alternative averment distinctly designated with certainty the profession—treating or offering to treat diseases of human beings. The petition as amended, when considered as a whole, sufficiently designated the profession he was practicing, the intrusion by him into it, that a certificate or other legal authorization within the state was required to practice it, and that he had not obtained from the state board of medical examiners of Alabama a certificate or the license required by law. This petition as amended was not subject to the demurrers of the defendant, and the court did not err in overruling them.

It was clear from the evidence, and without dispute, that the defendant was in the profession of a chiropractor. It was clear and undisputed that he had, since Aug. 18, 1924, practiced this profession of treating diseases of human beings by the chiropractic system in Baldwin County, Ala., and that he was prohibited by statute from so doing unless he had authority by certificate or license to do the acts. When the foregoing acts were shown by the state, they made out a prima facie case against him, and cast on him the burden of showing authority by proper certificate or license to practice that profession, as the proof of these facts was peculiarly within his knowledge. He offered no evidence, and the trial court very properly gave the affirmative charge to the jury, that if it believed the evidence in this case, it must find the defendant guilty as alleged in the petition.

Proceedings for Revocation of License and on Appeal

(In re Shortridge (N. D.), 207 N. W. R. 442)

The Supreme Court of North Dakota, in affirming a judgment which affirmed an order of the board of medical examiners of the state revoking the license of the appellant to practice medicine and surgery in the state, says that the grounds alleged in the order were stated to be that the licensee was, in August, 1924, convicted of a crime involving moral turpitude, to wit, registering at a hotel under a fictitious name; that in August, 1924, he performed a criminal abortion on a person named in the order; and that on Dec. 5, 1924, he was convicted of a felony, to wit, murder in the second degree. He appealed from an order of the district court denying his motion for change of venue, for a trial de novo (anew), for a jury trial, from an order denying his motion to take evidence before the district court, and from its order affirming the findings and decision of the board of medical examiners revoking the license.

The licensee was directed to show cause before the board in the office of its secretary at Grand Forks in Grand Forks County. He appeared at the time and place stated in the order to show cause, offered testimony, and a due hearing was had. It was not suggested that he made a request of the board for a change of venue; he did not move that the hearing before the board be had in the county of his residence, but, apparently, without objection, submitted to the jurisdiction of the board sitting in Grand Forks County. Section 468 of the compiled laws of 1913, which is a part of the statutes regulating the practice of medicine, enacted as chapter 189 of the session laws of 1911, clearly and unmistakably provides that the appeal from the order of the board lies to the district court of the county in which "such decision was made." It does not say that the case may thereafter be transferred to the county of the respondent's residence. The respondent himself appealed to the district court of Grand Forks County. The board had jurisdiction, in the circumstances, to hear the matter before it in that county; on elementary principles, the district court had jurisdiction, which the respondent could not oust by an affidavit for a change of venue in the manner provided for changing the venue of cases originating in the district court. Whether it would ever be a denial of due process of law for the board to refuse to hear such a proceeding in the county of the respondent's residence, or in some county other than that of the residence of its secretary, this court need not decide. It is conceivable that such a strong showing might be made that it would be error on the part of the board not to change the place of hearing.

The appellant contended that he had not had a day in court, because the trial court refused to take testimony anew, but decided the case on the record as transmitted to it by the board of medical examiners. It seemed to be the contention of counsel that, before the appellant might be deprived of the right to practice medicine in North Dakota, he was entitled to a trial in the district court—to be confronted by witnesses in that trial—and that only evidence not legally objectionable should be adduced and used as a basis for a judgment canceling his license. But the proceeding to cancel a license is not judicial; it is administrative. The state may prescribe the conditions under which a person may be permitted to hold himself out to the public as a qualified physician and surgeon; it may give a board the power to grant and revoke licenses to practice medicine on grounds prescribed in the law. Ordinarily the courts will not interfere with the action of such a board in cases in which it has acted arbitrarily, or threatens to act under statutes purporting to give arbitrary power to deprive a person of the valuable right to practice his profession. This court is of the opinion that the appellant was not entitled to a new trial in the district court, with the right to introduce new evidence. This court thinks that the statute clearly contemplates that the trial in the district court shall be on the record transmitted by the board of medical examiners and the evidence on which that tribunal based its findings and conclusion. Section 468 requires the board to reduce the testimony to writing and to transmit the transcript thereof to the district court in case of appeal. There is no suggestion in the statute that there shall be a new trial in the district court, with the right to offer new evidence, or, perhaps, raise new issues. The statute simply allows an appeal on the record as made by and before the board. Manifestly, the right of review thus accorded is amply sufficient to protect the right of the physician to due process and to insure against arbitrary action by the board depriving him of substantial legal rights.

Death from Pneumonia After Taking Cold

(Newkirk v. Golden Cycle Mining & Reduction Co. et al. (Colo.), 244 Pac. R. 1019)

The Supreme Court of Colorado, in affirming a judgment which affirmed an order of the industrial commission denying compensation to the claimant for the death of her husband, says that the accident was taking cold by exposure while her husband was fighting a fire on his employer's premises. Pneumonia appeared seven or eight days later, of which he died in six days. The industrial commission found that there was no connection between the cold and the pneumonia. There was evidence of competent physicians, among whom was the attending physician, to that effect. This court, therefore, as well as the district court, must take the finding as true. It was urged that the cold made the employee more susceptible to the pneumonia germ, but that was not a sufficient connection with the accident to justify compensation, because the accident must be the proximate cause of the death or of the disease that causes the death. The denial was therefore right. The commission also found that the cold was not an accident. If the employee had died of the cold, the court would have had here a serious question, but on this record it was not before the court.

Validity of "Meat Ordinance"—Meaning of "Sanitary"

(Mayor and City Council of Baltimore et al. v. Blocher & Schaff, Inc., et al. (Md.), 132 Atl. R. 160)

The Court of Appeals of Maryland says that it has no doubt that under the charter of the city of Baltimore the mayor and city council of Baltimore had the power to adopt an ordinance of the character of one adopted June 25, 1925, known as the "meat ordinance," the subject and purpose of which were to regulate that business so as more effectually to preserve and protect the public health. Much of the bill of complaint as well as of the briefs was devoted to a discussion of the wisdom, necessity and propriety of the ordinance; but since those are legislative rather than judicial questions, the court will not refer to them further than to say that, in view of the decisions of this court, as well as of the courts of practically every other state and of the federal government, it is now too late to deny the power of the state to regulate any business which if unregulated may menace the public health, and that the slaughtering of animals and the preparation and sale of the carcasses thereof for human food is such a business.

Section 7, which was the first part of the ordinance especially objected to, provides:

> That the commissioner of health shall cause to be made from time to time by experts in sanitation, and by other competent inspectors, such inspection of all slaughtering, meat, canning, salting, packing, rendering or similar establishments in which cattle, sheep, swine and goats are slaughtered and meat and meat food products thereof are prepared for sale, offered for sale, or sold in the city of Baltimore, as may be necessary to inform himself concerning the sanitary conditions of the same, and where the sanitary conditions of any establishments are such that the meat or meat food products are rendered unclean, unsound, unhealthful, unwholesome or otherwise unfit for human food, the commissioner of health shall refuse to allow said meat or meat food products to be labeled, marked, stamped and tagged "inspected and passed."

The primary, patent and essential purpose of this section is to confer on the inspectors the power to condemn material that is intrinsically unsound, unhealthful, unwholesome or otherwise unfit for human food, and it confers on them no other or broader power whatever. The reference to the sanitary condition of the establishments where such products are prepared means nothing more than that when such establishments are so negligently operated, and the conditions surrounding the preparation of their products so filthy or insanitary, that as a matter of common and usual experience it would be impracticable if not impossible to say with certainty that the products were sound, wholesome and fit for food, they may be condemned.

It is true that the section fails to define the word "sanitary," but it is evident from the whole enactment and from the particular context that it is to be given its ordinary and accustomed meaning. As thus defined, it means that which pertains to health, with especial reference to cleanliness and freedom from infective and deleterious influences.

Society Proceedings

COMING MEETINGS

American Association for Thoracic Surgery, Montreal, Canada, Sept. 30-Oct. 2. Dr. Ethan Flagg Butler, Robert Packer Hospital, Sayre, Pa., Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Chicago, Sept. 20-22. Dr. James E. Davis, 111 Josephine Ave., Detroit, Secretary.

American Association of Railway Surgeons, Chicago, Nov. 3-5. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.

American Climatological and Clinical Association, Philadelphia, Sept. 27-28. Dr. A. K. Stone, Auburn Street, Framingham Center, Massachusetts, Secretary.

American College of Physical Therapy, Chicago, Oct. 18-23. Dr. R. W. Fouts, City National Bank Building, Omaha, Secretary.

American College of Surgeons, Montreal, Canada, Oct. 25-29. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Public Health Association, Buffalo, Oct. 11-14. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

Association of American Medical Colleges, Cleveland, Ohio, Oct. 25-27. Dr. F. C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Association of Military Surgeons of the United States, Philadelphia, Oct. 14-16. Col. J. R. Kean, U. S. A., Ret., Army Medical Museum, Washington, D. C., Secretary.

Central States Pediatric Society, St. Louis, Oct. 22-23. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 21-23. Dr. F. B. Stephenson, 460 Metropolitan Building, Denver, Secretary.

Delaware State Medical Society, Dover, Oct. 12-13. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Indiana State Medical Association, West Baden, Sept. 22-24. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 18-22. Dr. W. B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.

Kentucky State Medical Association, Frankfort, Sept. 20-23. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

National Tuberculosis Association, Washington, D. C., Oct. 4-7. Dr. George M. Kober, 1819 Eye Street, N W., Washington, D. C., Sec'y.

Nevada State Medical Association, Reno, Sept. 24-25. Dr. H. J. Brown, Gray-Reid Building, Reno, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 11-14. Dr. Walter F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southern Minnesota Medical Association, Mankato, October 18. Dr. H. T. McGuigan, Redwing, Secretary.

Southwest, Medical Association of the, Kansas City, Mo., Oct. 11-14. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Vermont State Medical Society, Burlington, Oct. 14-15. Dr. W. G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 12-15. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Western Surgical Association, Duluth, Minn., Oct. 14-16. Dr. H. P. Ritchie, Lowry Building, St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

1: 527-670 (June) 1926

*Functional Disorders of Heart. P. D. White, Boston.—p. 527.

*Cardiac Neurosis Associated with Rheumatic Valvular Heart Disease. L. E. Viko, Salt Lake City.—p. 539.

*Paroxysmal Ventricular Tachycardia. A. R. Gilchrist, Edinburgh.—p. 546.

*Paroxysms of Tachycardia in Hodgkin's Disease. V. C. Graber, Iowa City.—p. 564.

*Gain in Weight as Guide in Convalescent Care of Cardiac Children. H. McCulloch, St. Louis.—p. 569.

*Clinical Features of Cases Exhibiting Electrocardiograms Conforming to Those of Experimental Complete Bundle-Branch Block. F. A. Willius, Rochester, Minn.—p. 576.

*Supernormal Phase in Conduction and Recovery Curve for Human Junctional Tissues. R. Ashman and G. R. Herrmann, New Orleans. —p. 594.

Prognosis in Rheumatic, Hypertensive and Syphilitic Heart Disease. E. F. Horine, Louisville, Ky.—p. 617.

*Prognostic Significance of Several Common Electrocardiographic Abnormalities. J. Hepburn and R. A. Jamieson, Toronto.—p. 623.

*Comparative Study of "Rheumatic" Mitral Regurgitation and Mitral Stenosis. H. B. Sprague and P. D. White, Boston.—p. 629.

*Hypertension and Increased Basal Metabolic Rate. E. P. Boas and S. Shapiro, New York.—p. 643.

Functional Disorders of Heart.—An analysis was made by White of 1,500 consecutive patients with cardiac symptoms and signs, in order to determine the absolute and relative incidence of functional disorders of the heart. Of the whole group, 16 per cent showed congestive failure; many had fever, and 13 per cent had angina pectoris. Thirty-six per cent had functional disorders of the heart without any demonstrable clinical evidence of cardiac structural change. This does not include a group of forty-eight cases of uncomplicated angina pectoris. The functional disorders shown by this group, excepting angina pectoris, were effort syndrome or the nervous heart, premature beats or extrasystoles of either ventricular or auricular origin, paroxysmal tachycardia, auricular flutter, auricular fibrillation, functional systolic murmurs and phobias of heart disease without other symptoms or signs. There were 220 cases of uncomplicated effort syndrome; sixty-five "functional" cases with effort syndrome; thirty-nine complicated by premature beats or extrasystoles, twenty by paroxysmal tachycardia, five by functional systolic murmurs and one by marked sinus arrhythmia; sixty cases of pronounced effort syndrome in combination with organic heart disease. In 103 cases, premature beats were found with organic heart disease; there were eighty-nine patients with paroxysmal tachycardia without evidence of organic heart disease. Twenty-eight of them showed premature beats also, and twenty others had well marked effort syndrome. There were forty-three cases of paroxysmal tachycardia showing evidence of organic heart disease. Auricular flutter was found in only eight cases. There were 198 patients with auricular fibrillation, 170 with evidence of organic heart disease, and twenty-eight without. There were 188 cases of angina pectoris. Forty-eight of these showed no evidence of organic heart disease. Twenty-eight cases showed functional systolic murmurs. Thirty-two cases of cardiac neurosis, seven of sinus arrhythmia, six of sino-auricular tachycardia and three of sino-auricular bradycardia are included.

Cardiac Neurosis and Rheumatic Valvular Disease.—Viko reports twenty-three cases in which cardiac neurosis was associated with rheumatic valvular heart disease. Suggestion from an anxious mother in three cases and from a doctor in eight cases were important factors in the development of the neurosis.

Paroxysmal Ventricular Tachycardia.—The five cases reported by Gilchrist illustrated differences not only in the cardiac mechanism during the attacks, but also in their causation. In two, the subjects of advanced myocardial disease with steadily progressing congestive failure, digitalis was the provoking cause of the attacks. The dose of digitalis did not exceed that calculated by the body-weight method of Eggleston. It is concluded that this disorder of rhythm depends more on the state of cardiac nutrition than on the degree of concentration of the drug in the tissues. It is suggested that a mechanism, similar to that which underlies the production of auricular fibrillation by digitalis in heart disease with normal rhythm, may also be present in these cases in which the drug has provoked ventricular tachycardia. In one case, nicotine intoxication was regarded as an important factor in the production of this arrhythmia. Advanced coronary sclerosis and myocardial disease were present in one case, *and in the last case no demonstrable cause could* be found. Quinidine sulphate was of value in controlling the paroxysms in this case. The prognosis is briefly discussed and emphasis is placed on closely watching the heart rate in all patients with advanced myocardial failure under treatment with digitalis.

Paroxysmal Tachycardia in Hodgkin's Disease.—The clinical course in Graber's case, as confirmed by the necropsy, was one of a rapidly progressing case of Hodgkin's disease. The onset of the paroxysmal tachycardia led him to feel that it might be the result of direct action of the enlarged mediastinal glands on the extrinsic nerves of the heart, either by pressure or edema. At necropsy the vagus nerves were found extensively injured by pressure.

Weight in Young Cardiac Patients.—Gain in weight is regarded by McCulloch as a sign of favorable progress of the convalescence. The weight should, therefore, be recorded regularly in order to anticipate relapses of the rheumatism or heart disease.

Complete Bundle Branch Block.—One hundred and five cases are analyzed by Willius in which electrocardiograms were obtained conforming to those of experimental complete bundle-branch block. From the data available after a critical study of this group, it is not possible to prove the actual existence of lesions involving the bundle branches, as only two deaths occurred during observation. However, the electrocardiograms in these cases so accurately resemble those obtained from experimental lesions, that the presence of bundle-branch lesions in most cases is probable. In ninety-nine cases, the electrocardiograms were of the complete right bundle-branch block type, while in six cases the left branch type occurred.

Supernormal Phase in Conduction in Heart Block.—Two cases of auriculoventricular heart block are reported by Ashman and Herrmann which they believe illustrate the supernormal phase in conduction. The second case, in which the argument for the supernormal is less strong, is of additional interest because of (*a*) the unprecedented length of the P-R intervals, which reach 1.01 seconds; (*b*) the variation in the duration of the rest intervals and of the P-R intervals, permitting the graphic representation of a recovery curve on conductivity, *and* (*c*) *the spreading of the* Q R S group and the decrease in the amplitude of the chief ventricular deflection with longer ventricular rest periods.

Electrocardiographic Abnormalities.—Negative T waves in various combinations of leads I, II and III, other than in lead III alone, according to Hepburn and Jamieson warrant a grave prognosis. The mortality figures in their group are comparable to those of other observers. Signs of bundle-branch block would appear to be the *most serious* electrocardiographic abnormality. The presence of ventricular extrasystoles does not appear to increase the mortality in auricular fibrillation. Low voltage unaccompanied by other electrocardiographic abnormalities is a prognostic sign of serious import.

Rheumatic Mitral Regurgitation and Mitral Stenosis.—Twenty selected cases each of "pure" mitral regurgitation and "pure" mitral stenosis have been studied by Sprague and White by history, physical examin[illegible] oentgen r[illegible] nd electrocardiogram. A review of the results is given. Mitral regurgitation causes a general enlargement of the heart, as contrasted with the right ventricular and left auricular enlargement due to mitral stenosis. Pure organic mitral regurgitation is a clinical entity but is not demonstrated at necropsy, as it is rarely if ever fatal. This does not, however, decrease its significance, since regurgitation is usually only one state in the process of stenosis which is more often the terminal condition. Under the most favorable conditions, organic mitral regurgitation exists as a potential danger.

Diastolic Hypertension and Increased Basal Metabolism.—All the facts presented by Boas and Shapiro seem to justify the conclusion that patients with diastolic hypertension and augmented heat production present a special syndrome which should be distinguished from exophthalmic goiter as well as from uncomplicated hypertension.

American Journal of Physiology, Baltimore

77: 245-502 (July) 1926

*Copper, Manganese and Zinc Factors in Metabolism of Animals. J. S. McHargue, Lexington, Ky.—p. 245.
Intermittent Pulse in Blood Pressure Investigation. D. T. Barry, Cork, Ireland.—p. 256.
Duration of Systole of Left Ventricle of Man. W. P. Lombard and O. M. Cope, Ann Arbor, Mich.—p. 263.
Pathogenesis of Tetany. L. R. Dragstedt and A. C. Sudan, Chicago.
    *V. Prevention and Control of Parathyroid Tetany by Calcium Lactate.—p. 296.
    *VI. By Strontium.—p. 307.
    *VII. By Oral Administration of Kaolin.—p. 314.
    VIII. Effect of Guanidine Intoxication on Blood Calcium of Parathyroidectomized Dogs.—p. 321.
Conditions of Activity in Endocrine Glands. XVII. Evidence for Accessory Accelerator Fibers from Thoracic Sympathetic Chain. W. B. Cannon, J. T. Lewis and S. W. Britton, Boston.—p. 326.
Id. XVIII. Locus of Calorigenic Action of Epinephrine: Tissue Metabolism. H. B. Hunt and E. M. Bright, Baltimore.—p. 353.
Motility of Denervated Mammalian Esophagus. E. J. Jurica, Chicago.—p. 371.
Model to Simulate Mechanism of Emptying of Gallbladder. S. Kodama, St. Louis.—p. 385.
Physiology of Vitamins. IV. Vitamin B in Relation to Gastric Motility. G. R. Cowgill, H. J. Deuel, Jr., N. Plummer and F. C. Messer, New York.—p. 389.
Effect of Physical Exercise on Complex Reaction Time and Auditory Acuity. G. Fellows, G. A. Goldsmith, L. Luenzman, L. Sammons, C. B. Williams and B. W. Zimmerman, Madison, Wis.—p. 402.
Effects of Asphyxia and Isletectomy on Blood Sugar of Myoxocephalus and Ameiurus. W. W. Simpson, Toronto.—p. 409.
Partial Destruction of Sino-Auricular Node by Excision and Ligation. M. C. Borman, Madison, Wis.—p. 419.
Relation of After-Nystagmus to Rotation-Nystagmus. I. Direct Effects of Rotations. G. F. Pilz, San Francisco.—p. 428.
Id. II. Modifying Influences. G. F. Pilz, San Francisco.—p. 443.
Cardiac Output of Dog. I. Normal Unanesthetized Dog. E. K. Marshall, Jr., Baltimore.—p. 459.
*Physiology of Pancreas. I. Subcutaneous Autotransplantation of Tail of Pancreas. A. C. Ivy and J. I. Farrell, Chicago.—p. 474.
Effect of Age on Hemoglobin of Rat. C. S. Williamson and H. N. Ets, Chicago.—p. 480.
"Treppe" (Stair) Phenomenon in Intact Human Skeletal Muscle. L. T. Brown and W. W. Tuttle, Urbana, Ill.—p. 483.
*Effects of Caffeine and Theobromine on Formation and Excretion of Uric Acid. G. W. Clark and A. A. de Lorimier, Berkeley, Calif.—p. 491.

Biologic Potency of Metals.—Rats confined to a synthetic diet and under conditions that were the best that could be improvised at the time gave results which McHargue interprets as indicating that compounds of manganese more definitely and possibly copper and zinc also have important biologic functions in animal metabolism. Moreover, it is assumed that the compounds of these elements as they occur in the natural state in green leaves and seeds of mature plants and the vital organs of animals have a much more active biologic potency than could be expected from feeding equal proportions of a crystalline salt of these metals in a synthetic diet.

Calcium Lactate Controls Parathyroid Tetany.—Dragstedt and Sudan state that adult dogs may be kept alive and in good condition after a complete thyroparathyroidectomy by the oral administration of calcium lactate. Milk, from 500 to 1,500 cc. daily, did not prevent the appearance of parathyroid tetany in adult dogs, nor did it preserve the life of these animals after thyroparathyroidectomy. It was even less effective in a young dog. Milk given in amounts of from 1,500 to 2,900 cc. daily did not control the tetany of pregnancy or lactation. The suggestion is made that the well known ameliorating effect of a diet of cow's milk in parathyroid tetany is more probably due to its content of lactose than to its content of calcium. It is also suggested that the superiority of human milk over cow's milk in preventing infantile tetany is due to its greater amount of lactose and in part due to its decreased amount of phosphate rather than to its calcium content.

Strontium Relieves Parathyroid Tetany.—Parathyroid tetany in dogs may also be relieved by the oral administration of strontium lactate in doses of from 1.0 to 1.5 Gm. per kilogram of body weight. The life of adult dogs following a complete thyroparathyroidectomy has been prolonged by Dragstedt and Sudan for at least twenty-four days by this treatment. Parathyroid tetany in adult dogs may be repeatedly relieved by the intravenous injection of large amounts of a modified Ringer's solution in which strontium chloride has been substituted in place of calcium chloride in the usual formula. The life of adult dogs following a complete thyroparathyroidectomy may be preserved for at least eighteen days by the repeated daily injection of large amounts of this modified solution.

Kaolin Protects Against Parathyroid Tetany.—The oral administration of kaolin in amounts of from 50 to 200 Gm. was found by Dragstedt and Sudan to be effective in controlling parathyroid tetany and in preserving the life of completely thyroparathyroidectomized dogs. It is suggested that this effect of kaolin is due to the adsorption of toxic products of bacterial growth in the gastro-intestinal tract and to the predominance of an aciduric intestinal flora which it brings about. These experiments are interpreted to support the view that parathyroid tetany is an intoxication and that the responsible toxic substances in nonpregnant animals arise chiefly in the gastro-intestinal tract as a result of bacterial proteolysis.

Transplantation of Tail of Pancreas.—A very successful method is described by Ivy and Farrell for the subcutaneous transplantation of the tail of the pancreas in the dog. The transplant produces both the external and the internal secretion of the pancreas.

Effects of Caffeine and Theobromine on Uric Acid.—According to Clark and de Lorimier, after caffeine ingestion there is evidence of an increase in uric acid production. After theobromine ingestion its formation seems to be unchanged, but its rate of excretion is diminished. It seems probable that the increases in uric acid are not due to direct oxidation of these methylated xanthines. Prolonged administration of either caffeine or theobromine seems to depress active excretion on the part of the kidney. There exists no proportional relationship between the amount of drug given and the quantity of uric acid excreted. Under normal conditions, there exists a relationship between the volume of urine and the quantity of uric acid excreted, but under diuretic conditions (other than when produced by uric acid itself) no such relationship is evident. Apparently, uric acid is actively excreted.

American Review of Tuberculosis, Baltimore

13: 479-584 (June) 1926

*Errors in Diagnosis of Tuberculosis in Children. W. E. Carroll, Meriden, Conn.—p. 479.
*Tuberculous Cervical Adenitis. C. B. Gibson, Meriden, Conn.—p. 489.
*Tuberculosis Survey of Extremely Underweight Children. K. H. K Wolfe, Lincoln, Neb.—p. 506.
*Care of Tuberculosis Preventorium Child. E. K. Geer, St. Paul.—p. 524.
Clinics and Follow-Up Work After Sanatorium Treatment for Tuberculosis. A. T. Laird, Mopeming, Minn.—p. 529.
*Artificial Pneumothorax: One Hundred and Fifty Cases. P. M. Mattill and M. H. Wall, Oak Terrace, Minn.—p. 538.
Pathways for Nervous Reflexes from Parenchyma of Lung. A. T. Rasmussen, Minneapolis.—p. 545.
Investigation of Acid-Fastness of Tubercle Bacilli. B. Suyenaga, Chicago.—p. 550.

Errors in Diagnosis of Tuberculosis.—Carroll urges that every care and precaution be taken not to "railroad" a patient into a disease that he does not have. Difficulty arises chiefly in two groups of patients; namely, those who present very few abnormal signs and those who present a great many abnormal signs. In the former group the diagnosis of tuberculosis should not be made unless it is obvious that the patient is suffering from some impairment of health, and then only after other causes have been carefully excluded. In a sturdy, thriving child the diagnosis of clinical tuberculosis is not warranted, even if physical and roentgen-ray examinations justify the diagnosis in a child in poor health. Symptoms are more important than signs. In children who present a great many abnormal physical signs and who, even so, are in good general condition—afebrile, well nourished and strong—some condition other than tuberculosis is probably the causative factor. The same may be said of the child with cough of years' duration who remains in good general condition and of the child with clubbed fingers whose general health leaves little to be desired. Definite clinical entities, other than chronic nontuberculous pulmonary disease, are at times confused with tuberculosis. At least, such has been true in 10 per cent of the patients discharged from the sanatorium in which Carroll is located. Forty-five and six-tenths per cent of patients discharged from this sanatorium were nontuberculous. In 20.7 per cent of cases, there was good cause of one kind or another for recommending the patient for admission. In 24.9 per cent of cases, the patient was admitted under gross error in diagnosis.

Treatment of Tuberculous Adenitis.—In Gibson's opinion tuberculin is of little value in the treatment of tuberculous adenitis. Surgery, in competent and conservative hands, is applicable to a small percentage of cases, after standard nonsurgical procedures have failed, and in cases in which the removal of lymph nodes is of more importance than the possible development of a paralysis. Roentgen-ray treatment has not yet been established on a sufficiently definite basis to warrant conclusions. Heliotherapy is undoubtedly successful in promoting more cures of tuberculous adenitis than can ordinarily be anticipated by other means. The Calot method of treatment by aspiration and injection is highly successful when used in conjunction with general heliotherapy. Whether it is any more successful than simple aspiration, practised in conjunction with heliotherapy, is doubtful. The proper treatment of tuberculous adenitis rests on three points: (1) Alleviation of causative or underlying processes, such as treatment of infecting foci in the tonsils, adenoids or teeth. (2) The establishment of good hygiene, with particular attention to good food, fresh air, rest and exercise. (3) The application of a specific remedial agent, the most satisfactory at the present time being heliotherapy, which may in certain instances be aided by aspiration and in even fewer instances by surgery.

Causes of Underweight in Children.—Examination of several hundred children has convinced Wolfe that the vast majority of underweight children live on a deficiency diet, consisting chiefly of acid-forming food. Almost a perfect negative correlation exists in extremely underweight children between their consumption of an excessive amount of sweets and loss of appetite for vegetables, with the exception of potatoes. A cause-and-effect relationship seems to exist between the radically wrong living habits practiced by underweight children and the high percentage who suffer from the diseases, defects and clinical symptoms considered in this study.

Care of Tuberculosis Preventorium Child.—The measures employed at the Ramsey County Preventorium are: rest in fresh air, supervised activities, a well balanced and adequate diet, prompt eradication of infectious foci, heliotherapy and air baths, tuberculin, open air schoolrooms, child guidance survey and follow-up work.

Artificial Pneumothorax.—Mattill and Wall assert that pneumothorax should be supplemented by thoracoplasty in those patients having no free pleural space. Thoracoplasty should be considered in those cases in which pneumothorax is only partially satisfactory and in those cases in which a permanent collapse is indicated.

Archives of Internal Medicine, Chicago

38: 1-144 (July) 1926

*Insensible Perspiration: Relation to Human Physiology and Pathology. F. G. Benedict and H. F. Root, Boston.—p. 1.
*Rate of Urea Excretion as Test of Renal Function by Modification of McLean's Index. S. Kawahara, Rochester, Minn.—p. 36.
*Gastric and Duodenal Ulcer. M. Sturtevant and L. L. Shapiro, New York.—p. 41.
*Edema: Correlation of Various Findings. M. M. Kunde, Chicago.—p. 57.
*Stenosis of Isthmus (Coarctation) of Aorta; Diagnosis During Life. J. T. King, Jr., Baltimore.—p. 69.
*Rôle of Insulin in Protein Metabolism. N. W. Janney and I. Shapiro, Los Angeles.—p. 96.
*Relative Importance of Systolic and Diastolic Blood Pressure in Maintaining Coronary Circulation. F. M. Smith, G. H. Miller and V. C. Graber, Iowa City.—p. 109.
*Auricular Fibrillation with Regular Ventricular Rhythm and Rate Over Sixty. R. L. Levy, New York.—p. 116.
External Factors Causing Variable Results in Kottmann Reaction. J. Kasanin and E. Knapp, Boston.—p. 129.
Water Metabolism. IV. Sugar Metabolism in Dehydration. E. Andrews, Chicago.—p. 136.

Insensible Perspiration.—Benedict and Root found that the curve of insensible perspiration follows the metabolism curve. When metabolism is high, there is much insensible perspiration; when metabolism is low, there was little insensible perspiration.

Urea Excretion as Test of Renal Function.—Kawahara has found McLean's index practicable as a test of renal function, although for repeated examinations its value is enhanced by the use of Bahlmann's micromethod for urea determination. The procedure is adaptable to clinical use, since it is not necessary to keep the diet constant on account of it. If the index shows a normal value, the protein in the diet need not be so rigidly restricted as otherwise.

Statistics on Gastric and Duodenal Ulcer.—In 7,700 necropsy records, 120 cases of gastric ulcer were found by Sturtevant and Shapiro, of which thirty-four were healed. In the same 7,700 records, forty-four duodenal ulcers were found, of which nine were healed. In five of these cases, the gastric and duodenal ulcers were found together, making a total of 159 cases in which either gastric or duodenal ulcers were found, or both. Seventy-six per cent of the gastric ulcers were found near the pylorus; 12 per cent near the cardia, and 12 per cent in the midgastric zone. Of nine ulcers on the anterior surface, three were near the pylorus. The duodenal ulcers were nearly all in the first portion of the duodenum. In seven cases of multiple ulcer, the second portion was involved. There were two cases of encircling ulcer extended to the second portion.

Edema.—The correlation of elastometer examination, disappearance time for intradermally injected salt solution, urinalysis and nitrogen retention of the blood in edema were studied by Kunde.

Stenosis of Isthmus of Aorta.—Of the four cases of stenosis of the isthmus (coarctation) of the aorta recognized during life reported by King, two were thought to be instances of slight stenosis and two of well marked stenosis or total obliteration of the aorta at about the site of the entrance of the ductus botali. Postmortem reports show that the condition is rarely recognized during life. Symptoms that may occur are palpitation, dyspnea, myocardial insufficiency, nocturia, cramps in the legs and intermittent claudication. The signs that may occur are: (*a*) bilateral pulsation in the interscapular region; (*b*) relatively greater pulsation in the upper extremities than in the lower; (*c*) pulsating, superficial, collateral arteries, coursing obliquely across the back of the thorax, downward toward the spine; dilated intercostal arteries; (*d*) relatively higher blood pressure in the arms than in the legs; (*e*) tendency to higher blood pressure in the right than in the left arm; (*f*) pulsus differens, due to the relative delay of the apex of the left radial pulse and rounding of its apex; (*g*) tendency for the right radial pulse to feel larger than the left, and (*h*) systolic murmurs over areas of intrascapular pulsation, over the collateral arteries, at times over the arch of the aorta anteriorly or over the whole aorta posteriorly.

Insulin Therapy of Nondiabetic Conditions.—Experimental support was obtained by Janney and Shapiro for the extension of insulin therapy to various nondiabetic conditions, characterized by protoplasmic strain on tissues, such as inanition, trauma and sepsis.

Decreased Coronary Circulation Causes Cardiac Hypertrophy.—Smith et al. assert that the decreased coronary flow associated with the diminished diastolic pressure in aortic regurgitation and arteriovenous aneurysm is probably a significant factor in the development of the cardiac hypertrophy and, later, cardiac failure.

Auricular Fibrillation with Regular Ventricular Rhythm.—Four cases of auricular fibrillation are reported by Levy in which the ventricular rhythm showed periods of regularity, the rate of the ventricles being over 60 per minute. Fifteen similar cases have been found in the literature, in which the ventricular rate was over 55. The regular ventricular rhythm lasted from a few hours to several days. The condition is of diagnostic import in that it may simulate normal (sinus) rhythm.

Archives of Pathology and Laboratory Medicine, Chicago

2: 1-148 (July) 1926

*Distribution of Water and Salts in Human Organs During Fever. E. Pribram, Chicago.—p. 1.
*Ganglioglioma. O. C. Perkins, New York.—p. 11.
*Pathologic Anatomy of Hypophysis. IV. Necrosis and Atrophy. J. P. Simonds and W. W. Brandes, Chicago.—p. 18.
*Leukemia and Central Nervous System. B. M. Fried, Boston.—p. 23.
*Healed Dissecting Aneurysm of Aorta. E. M. Hall, San Francisco.—p. 41.
Cultural Methods for Increasing Number of Spirochaetae Pallidae in Fresh Syphilitic Tissue. L. W. Shaffer, Detroit.—p. 50.

Distribution of Water and Salts During Fever.—Pribram summarizes his paper as follows: During fever the human organism is in a state of thirst. This state of thirst is caused by a change of the distribution of water in the organism. The parenchymatous organs absorb more water, owing to their contents of protein. The causes of the increased demand of water by the parenchymatous organs are of physiochemical nature. The rise of the temperature, the breaking down of proteins and the change of the chemical reaction of the blood (increase of hydroxyl ions) all produce the same effect, an increased faculty of the cell colloids to imbibe water. Proteins take up more water if the temperature rises from 37 to 40 C. Organs not so rich in proteins (the skin, the mucous membranes, the subcutaneous tissue) and the muscles lose water, supplying the inner organs with water. The delivery of water by the muscles may be explained by an exchange of their potassium salts for sodium salts. There is an increase of the quantity of potassium phosphate in the urine and a decrease of sodium chloride. The origin of the potassium salts is doubtless the muscle tissue. This tissue has the faculty of imbibing more water in the presence of potassium salts than in the presence of sodium salts. The loss of water by the skin, the mucous membranes and the subcutaneous tissue cannot yet be explained in a similar manner, but recent articles make it probable that there the nervous system (parasympathetic system) exerts a regulating influence.

Ganglioglioma.—A tumor of the brain is recorded by Perkins for which the name ganglioglioma is suggested because of its richness in mature neurons embedded in a heavy matrix of fibrous-like tissue. The neurons showed great activity, dividing by amitosis. The matrix was abundant and, because of its nonspecificity for differential stains, it is believed to be of glial origin.

Pathologic Anatomy of Hypophysis.—Two groups of lesions in the anterior lobe of the hypophysis of patients dying from acute infections and brain tumor are described by Simonds and Brandes as: (1) localized areas of necrosis in which parenchyma, connective tissue and blood vessels are completely destroyed, probably as a result of infarction; and (2) multiple localized areas in which the epithelial cells have completely or almost completely disappeared, leaving intact connective tissue and greatly dilated blood vessels.

Leukemia and Central Nervous System.—A case of leukemic lymphadenosis is reported by Fried, and thirty cases of leukemic lymphadenosis and myelo-adenosis from the literature, involving the central nervous system, are reviewed. In Fried's case a patient with a subacute leukemic lymphadenosis died of apoplexy, and at necropsy numerous lymphomas and hemorrhages were found in the brain. Grave degenerative changes were found in the interstitial, parenchymatous and mesenchymal elements of the brain, more pronounced in the vicinity of the extravasated blood and also around the lymphomas. These changes are not regarded as peculiar to leukemia, but are ascribed to circulatory disturbances in the brain due to hemorrhages and accumulated masses of lymphoid elements (similar lesions of a minor degree occur in primary and secondary malignant diseases of the brain). In the thirty case reports gathered from the literature, lesions of the nervous system have been reported in the hemispheres in twelve, in the cranial nerves in eight and in the cord in eleven cases, in eight of which spinal degenerations were observed in the absence of lymphomas, in many respects resembling those observed in pernicious anemia.

Healed Dissecting Aneurysm of Aorta.—Hall reports a case of a dissecting aneurysm which developed in the aorta of a youth, aged 17, following a mile race. He lived fifteen years, and during this time was able to compete in strenuous athletic events. A patent ductus arteriosus of small caliber was also present. During the last years of life, all signs of aortic insufficiency could be made out. At necropsy the heart was found enormously enlarged, mainly due to hypertrophy and dilatation of the left ventricle. The tear in the aorta had occurred immediately above the aortic valve, where a saclike aneurysm the size of a man's fist had formed in the walls of the ascending aorta.

Archives of Physical Therapy, X-Ray, Radium, Omaha

7: 379-442 (July) 1926

Application of Radiology and Physiotherapy to Gynecology: V. Electrotherapy. G. E. Ward, Baltimore.—p. 379.
Electrothermic Methods in Treatment of Neoplastic and Allied Diseases. W. L. Clark, Philadelphia.—p. 385.
Effect of Short Wave Roentgen Ray and Gamma Rays on Nasopharyngeal Lymphoid Tissue. J. R. Ranson and S. Withers, Denver.—p. 393.
Autocondensation in Hypertension. F. B. Moor, Loma Linda, Calif.—p. 397.
Surgical Diathermy for Papillomas of Bladder. F. L. Nelson, Ottumwa, Iowa.—p. 405.
Melanosarcoma of Neck Treated by Electrocoagulation. J. W. Duncan, Omaha.—p. 412.

Atlantic Medical Journal, Harrisburg, Pa.

29: 671-738 (July) 1926

Toxemias of Pregnancy. J. E. Talbot, Worcester, Mass.—p. 671.
*Influence of Congenital and Hereditary Factors in Heart Disease. E. Weiss, Philadelphia.—p. 677.
*Congenital and Hereditary Factors in Arterial and Renal Disease. S. S. Leopold, Philadelphia.—p. 681.
*Aberrant Thyroids. J. R. Paul, Philadelphia.—p. 684.
Hermaphrodite. J. A. Betts, Easton, Pa.—p. 686.
Diaphragmatic Hernia in Young Athlete. W. S. Newcomet, Philadelphia.—p. 687.
Mediastinal Tumor. F. B. Utley, Pittsburgh.—p. 689.
Imperforate Hymen, Causing Retention of Urine. F. C. Hammond, Philadelphia.—p. 690.
Prolapse of Uterus Through Ring Pessary, with Strangulation. H. A. Duncan, Philadelphia.—p. 691.
Subacute Pancreatitis, with Cyst and Cholelithiasis. J. L. Lenker, Harrisburgh.—p. 692.
Lymphosarcoma Involving Both Breasts. H. G. Schleiter and A. J. Bruecken, Pittsburgh.—p. 693.
Spasm in Middle of Esophagus. G. W. Grier, Pittsburgh.—p. 696.
Treatment of Eye Traumas. E. B. Heckel, Pittsburgh.—p. 697.
Two Cataract Cases. S. S. Smith, Pittsburgh.—p. 699.
Interstitial Syphilitic Keratitis. T. H. Manley, Jr., Tarentum.—p. 700.
Method of Making Ether Dropper. G. W. Reese, Shamokin, Pa.—p. 702.

Congenital and Hereditary Factors in Heart Disease.—Weiss commends the classification of congenital heart disease made by Abbott, who divides these cases into noncyanotic and cyanotic groups, depending on whether the mechanical disturbance of the circulation produced by the defect leads to a shunt of blood from the arterial to the venous side, or from the venous to the arterial. The noncyanotic group is made up of three principal forms: patent foramen ovale, patent ductus arteriosus and defect of the ventricular septum. All are characterized by latent or slight symptoms and distinct physical signs. A peculiar harsh murmur of unusual rhythm and intensity frequently accompanied by a thrill, situated in the left upper precordium and often associated with evidences of dilatation of the pulmonary artery, is the most important feature of this group. It is often possible to distinguish the individual form that is present. Prognosis for life is good. The dangers to be guarded against are infection and strain. The principal cyanotic form of congenital heart disease is pulmonary stenosis, often associated with defect of the ventricular septum and dextroposition of the aorta. The symptoms are more important than the physical signs in diagnosis. Congenital cyanosis, clubbing of the fingers, polycythemia, dyspnea and suffocative attacks are the features of this group. Prognosis is not good, but adult life may be reached. Pulmonary tuberculosis and bacterial endocarditis are usually responsible for death.

Hereditary Factors in Kidney Diseases.—Leopold accepts the opinion that with the exception of the known nephrotoxic substances such as uranium and mercury, which invariably produce nephritis, the other etiologic factors are usually contributory and secondary, and the fundamental and primary cause *is the quality of tissue which the individual inherits.* A case illustrating familial arterial and renal disease is described.

Aberrant Thyroids.—The relative frequency of occurrence of aberrant islands of thyroid tissue in certain sites of predilection in the neck is discussed by Paul, with the attempt to define the median and lateral cervical types as clinical entities. Emphasis is laid on the extremely labile character of thyroid tissue, which is quite prone to undergo hypertrophy and colloid change as a result of physiologic influences, and on the fact that aberrant islands of thyroid are similarly subject to the same influences.

Boston Medical and Surgical Journal

195: 203-252 (July 29) 1926

*Dilution and Concentration Tests of Renal Function. J. H. Pratt, Boston.—p. 203.
Laennec, The Man—1781-1826. W. P. Coues, Brookline, Mass.—p. 208.
Laennec's Clinicopathologic Studies. H. Morrison, Boston.—p. 211.
Laennec's Work on Mediate Auscultation. H. R. Viets, Boston.—p. 213.
Relation of Colon to Abdominal Tumors. J. F. Baldwin, Columbus, Ohio.—p. 217.
Introducing Solutions Subcutaneously. W. Van Hook, Chicago.—p. 219.
Control of Communicable Diseases Prevalent in Massachusetts. Mortality During Past Seventy-Five Years. E. G. Huber, Boston.—p. 220.

195: 253-298 (Aug. 5) 1926

*Cancer and Diverticulitis of Large Intestine. R. H. Miller, Boston.—p. 253.
*Postoperative Massive Atelectasis. M. F. Eades, Franklin, N. J.—p. 258.
*Effect of Light on the Vitamin A Content of Cod Liver Oil. A. D. Holmes and M. G. Pigott, Detroit, Mich.—p. 263.
Control of Communicable Diseases Prevalent in Massachusetts. E. G. Huber, Boston.—p. 266.

Dilution and Concentration Tests of Renal Function.—The dilution and concentration tests are approved of by Pratt because they give important information regarding kidney function. If an abnormal response is obtained, the tests should be repeated once or twice after measures have been taken to remove disturbing extrarenal factors, the chief of which are dehydration of the tissues and an excess of water in the organisms. The tests should be employed in combination with the other functional methods of proved value and interpreted cautiously in the light of all facts that can be gained from the complete clinical study of the case. The tests have been *found of distinct value in the detection of* partial dehydration and latent edema.

Surgery of Large Intestine.—Five cases are presented by Miller showing difficult and unexpected problems in surgery of the large intestine. He says that, in the presence of indefinite gastro-intestinal symptoms in people of cancer age, the roentgen ray and the examination of the stools for occult blood are very important aids to diagnosis. Exploratory operation is preferable to procrastination. Cancer of the large intestine is, on the whole, favorable for operation. In any case that seems like appendicitis, but in which the symptoms and signs are on the left side, diverticulitis should be suspected. For this, conservatism is preferable to radical surgery.

Postoperative Massive Atelectasis.—It is believed by Eades that bronchial obstruction and weakened respiratory movement in varying combinations produce postoperative massive atelectasis. Three cases are cited.

Effect of Light on Vitamin in Cod Liver Oil.—The results reported by Holmes and Pigott demonstrate that during the storage and distribution of cod liver oil, it should be packed in light-proof containers, such as amber bottles or flint bottles wrapped in paper or cartons, because sunlight destroys the vitamin A potency of the oil.

Florida Medical Association Journal, Jacksonville

13: 1-27 (July) 1926

Eczema in Infancy and Childhood. W. E. Sinclair, Orlando.—p. 1.
Fifty Cases Showing Basal Metabolism Rate 15 Per Cent Below Average Normal. E. W. Bitzer, Tampa.—p. 5.
Outbreak of Smallpox. J. M. Lowrey, Miami.—p. 9.
Myxedema. J. W. Snyder, Miami.—p. 11.
Postoperative Massive Collapse of Lung: Case. J. A. Beals, Jacksonville.—p. 14.
Foreign Bodies in Food and Air Passages. W. J. Knauer, Jacksonville.—p. 17.

Journal of Laboratory and Clinical Medicine, St. Louis

11: 911-1014 (July) 1926

*Organisms Occurring in Two Cases of Erosio Interdigitalis. G. V. Stryker and M. S. Fleisher, St. Louis.—p. 911.
*Calcium Distribution in Blood. P. L. Kirk and C. G. King, Pittsburgh.—p. 928.
Cytomorphosis of Tubercle Bacillus and Other Acid-Fast Micro-Organisms. H. J. Corper, Denver.—p. 936.
*Epinephrine Shown Chemically in Blood: Differentiating Epinephrine from Glucose in Blood. H. Friend, New York.—p. 950.
*Basal Metabolic Rate in Obesity. H. M. Jones, Chicago.—p. 959.
Sarcinae in Psoriasis. M. A. Marcus, Philadelphia.—p. 967.
Rapid Determination of Albumin in Urine. F. B. Kingsbury, C. P. Clark, G. Williams and A. L. Post, New York.—p. 981.
Simplified Technic for Shaffer-Hartmann Method for Blood-Sugar Analysis. E. P. Bugbee and A. E. Simond, Detroit.—p. 990.
Method of Skin Scarification. E. B. Wood, Atlanta, Ga.—p. 993.
Hydrogen-Ion Titration of Culture Mediums and Preparation of Color Standards. B. W. Culyer, Ottawa.—p. 994.
Alarm Apparatus for Arnold Sterilizer. J. W. Churchman and L. Siegel, New York.—p. 996.
Mass Cultivation of Gonococci for Vaccine. J. W. Smith, Jr., and B. Cross, Washington, D. C.—p. 999.

Monilia Causes Erosio Interdigitalis.—Two facts emerge from this study by Stryker and Fleisher: *first, that Monilia* may be the causative agent of so-called erosio interdigitalis, and second, that the organisms which appear in the dermatologic lesions may also be found in the feces of the affected individual.

Blood Calcium in Jaundice and Pregnancy.—The total and ultrafiltrable calcium has been estimated by Kirk and King in the blood of seven persons showing evidence of a jaundiced condition. Comparison with normal cases indicates that the percentage of ultrafiltrable calcium found in this condition is below normal. The difference is not thought to be sufficiently great, however, to account for the frequent delayed coagulation. Preliminary indication is given that the ultrafiltrable calcium is low during pregnancy. The use of citrate, oxalate and fluoride as anticoagulants was found to cause a very marked change in the calcium distribution in blood.

Epinephrine Causes "Hyperglycemia."—Epinephrine has been found by Friend in both normal and pathologic blood sugars. He shows that in many cases of apparent "hyperglycemia," epinephrine and not sugar is being estimated.

Basal Metabolism in Obesity.—Jones is of the opinion that many cases of obesity caused by a diet in excess of the normal body's needs (simple obesity) are often incorrectly diagnosed either as hypopituitarism or as hypothyroidism; and that many cases of obesity due to eunuchoidism are also incorrectly diagnosed as cases of hypopituitarism. He says that thyroid extract should never be used in the treatment of any form of obesity in amounts sufficient to raise the basal metabolic rate to more than about 10 per cent plus. Any attempt at reducing the body's energy intake of food, as in "dieting," is promptly compensated by the body's *reduction in energy* outgo, thus defeating the purpose of the dietary reduction, and too often effectively discouraging the patient with the "dieting" method of treatment for obesity.

Journal of Metabolic Research, Morristown, N. J.

5: 147-363 (April, May, June) 1924

*Nutritive Value of Gelatin. T. B. Downey, Pittsburgh.—p. 147.
Effect of Thyroparathyroidectomy and Parathyroidectomy. XXVII. F. S. Hammett, Philadelphia.—p. 169.
Determining Basal Metabolism of Dogs. M. M. Kunde, Chicago.—p. 181.
*Requirements of Vitamin B in Metabolism of Foods Containing Proteins and Carbohydrates in Varying Proportions. J. A. Collazo, Montevideo, Uruguay, and C. Funk, Warsaw, Poland.—p. 187.
Metabolism of Vitamin B as Food Constituent. J. A. Collazo, Montevideo, Uruguay, and C. Funk, Warsaw, Poland.—p. 195.
*Diastatic Activity. I. Action of Unsaturated Fatty Acids and Soaps on Enzyme Diastase. G. Cameron, Melbourne, Australia.—p. 205.
*Id. II. Action of Bile on Enzyme Diastase. G. Cameron, Melbourne, Australia.—p. 229.
Vitamin Potency of Cod Liver Oils. V. A. D. Holmes, Boston.—p. 251.
Id. VIII. Potency of Haddock Liver Oil. A. D. Holmes, Boston.—p. 259.
*Relief of Diabetic Acidosis by Insulin. E. L. Sevringhaus and H. A. Raube, Madison, Wis.—p. 263.
Influence of Thyroid on Increased Heat Production During Pregnancy and Lactation. D. Marine, A. Cipra and L. Hunt, New York.—p. 277.
*Indican as Influenced by Constipation and B. Acidophilus Therapy in Psychotic Patients. L. Segal, New York.—p. 293.
Microdetermination of Fermentable Blood Sugar. R. J. Wagner, Morristown, N. J.—p. 353.

Nutritive Value of Gelatin.—Gelatin is a protein whose chemical composition and properties preclude its use as the sole or major source of protein in the dietary. When fed in combination with proteins of certain natural food products, such as oats, wheat and barley, Downey says it possesses a decided supplementary value, presumably through its high proportion of the amino-acid lysine; when fed with corn, peas and beans, its cleavage products are of little value. The value of pasteurized whole milk and of ice cream (average of commercial product) for growth and continued health of animals is improved to a marked extent by the inclusion of gelatin. Better nutritional status of females fed on the gelatin-containing diets was reflected in increased reproduction in the rats studied, although successful rearing of young was obtained on only one specific diet. The data indicate that gelatin is well utilized as a protein when fed in conjunction with milk proteins and further that the effects of gelatin as a colloid of the emulsoid type exert a significant influence on digestibility and absorption when ingested with these dairy products with the exclusion of other foods. In these particular diets, the colloidal effect of gelatin may be equal in importance to, if not indeed greater than, its value as a protein.

Need for Vitamin B in Food.—Collazo and Funk state that, on diets free from vitamin B or on diets containing only a sufficient amount for maintenance, no excretion of this substance takes place. Vitamin B appears in the excreta of the pigeon only when a large oversupply is given, and this applies to artificial food mixtures and to the natural dietary as well. Vitamin B, therefore, does not act as a catalyst but is a building stone used up during the metabolic processes. In absence of vitamin B a green color appears in the excreta of the pigeon, a safe sign of deficiency of this substance in the diet.

Action of Oleates on Diastatic Activity.—The action of oleates on the enzyme diastase has been studied by Cameron, and Stock's work is confirmed, thus bringing amylolytic enzymes into line with proteolytic ferments as regards their relationship to oleates. A time factor and concentration factor seem evident. The temperature factor needs elucidation. Saturation of the oleates and the effect of boiling are suggestive of a chemical rather than a physical reaction. Some evidence is presented that there is also a relationship between starch and oleates, possibly of a physical nature.

Action of Bile on Diastatic Activity.—Cameron asserts that "whole" bile increases the diastatic activity of a fluid. This action is due chiefly to the taurocholates, glycocholates and choleates having an inhibitory action. Cholesterol has no action on diastase. Boiling the bile produces no alteration in this action.

Nature of Diabetic Coma.—The comatose condition in diabetes is held by Sevringhaus and Raube to be due directly to lack of ability to oxidize glucose, attributable to absence of a sufficient supply of insulin. This concept of suboxidation due to inability to oxidize glucose seems particularly helpful in explaining the tendency to retarded mental processes which is well known in diabetic patients. It is easily extended to explain the muscular weakness so common in diabetes. The suboxidative factor in coma would not be amenable to treatment with alkali, although it yields promptly to insulin.

Indican as Influenced by Constipation.—More than 500 urinalyses were made by Segal on forty-eight psychotic patients. Twenty-three of these patients were receiving various *B. acidophilus* preparations for the alleviation of constipation; in twenty-five control cases, no treatment was being received. It was apparent that there is no correlation between constipation, as evidenced by infrequency of bowel movements, and indican excretion. Only thirteen instances of abnormal excretion were found. Of these, six occurred in constipated subjects, six in subjects having good daily defecations and one in a patient with diarrhea. The indican excretion is no more affected by a high carbohydrate diet than by one comparatively low in carbohydrate. There was no correlation between the mental condition of psychotic patients and their indican excretion. The ingestion of lactic acid preparations and lactose caused the formation of strongly acid urines. The acidity of the urine was found to vary with the lactic acid-producing ability of the preparation.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

27: 287-354 (May) 1926

*Action of Digitalis on Frog Heart: Modification by Quinidine. M. Cattell, Boston.—p. 287.
Action of Small Doses of Ergotamine on Muscular Response to Stimulation of Sympathetic Nerves. H. V. Van Dyke, Edinburgh.—p. 299.
Effects of Atropine, Physostigmine and Pilocarpine on Cardiac Vagus of Fowl. O. S. Gibbs, Halifax, N. S.—p. 319.
*Effect of Sodium Phenobarbital and Some Other Barbituric Acid Derivatives on Coronary Circulation. IV. C. M. Gruber and S. J. Roberts, St. Louis.—p. 327.
Effect of Epinephrine and Other Vasomotor Drugs on Cerebral Blood Vessels. XVII. C. M. Gruber and S. J. Roberts, St. Louis.—p. 335.
*Effect of Phenobarbital (Luminal) and Some Other Barbituric Acid Derivatives on Cerebral Circulation. V. C. M. Gruber and S. J. Roberts, St. Louis.—p. 349.

Quinidine Modifies Digitalis Action.—Cattell asserts that the speed of digitalis action is slowed by previous exposure of the heart to quinidine solutions. Quinidine added to the digitalis solution was ineffective in delaying the action of the latter drug. Digitalis appears not to modify the action of toxic concentrations of quinidine.

Effect of Barbituric Acid Derivatives on Coronary Circulation.—All the barbituric acid derivatives tested by Gruber and Roberts in dilute solutions produce coronary vasodilatation when injected into the perfusate of an isolated cat or rabbit heart. Concentrated solutions produce variable results. Iso-amyl ethyl barbituric acid, when injected intravenously in saturated aqueous solutions, materially lowers the arterial blood pressure in experimental animals.

Effect of Barbituric Acid Derivatives on Cerebral Circulation.—All the barbituric acid derivatives tested by Gruber and Roberts cause dilatation of the cerebral vessels. Sodium phenobarbital, 50 or 100 mg., when dissolved in Ringer's solution *p*H 7.6 modified by the addition of autogenous defibrinated blood to 20 per cent and injected into a perfusate of the same fluid, produced marked cerebral vasodilation. In the brain as in other organs, the barbituric acid derivatives act directly on the vessel wall in producing vasodilatation. The beneficial results from the administration of phenobarbital in epilepsy may be, in part, due to its cerebral vasodilator action.

27: 355-494 (June) 1926

*Iodine Content of Human Cerebrospinal Fluid. D. Campbell and W. R. Snodgrass, Glasgow.—p. 355.
*Effect of Morphine and Other Opium Alkaloids on Muscular Activity of Alimentary Canal. I. Small Intestine. O. H. Plant and G. H. Miller, Iowa City.—p. 361.
Toxicity of Mercuric Salicylate for Rabbits. G. E. Wakerlin and A. S. Loevenhart, Madison, Wis.—p. 385.
*Point of Attack of Pituitary Extract and Histamine on Smooth Muscle. D. I. Macht, Baltimore.—p. 389.
*Plexus Free Preparations of Small Intestine: Their Rhythmicity and Response to Drugs. H. S. Gasser, London.—p. 395.

*Lymph Alterations Following Arsenic Injections. W. F. Petersen and T. P. Hughes, Chicago.—p. 411.
Influence of Thyroid Feeding on Chronic Morphine Poisoning. E. M. Scarborough, London.—p. 421.
Pharmacologic Action of Sparteine and Related Alkaloids. I. Sparteine and Oxysparteine. R. S. A. Heathcote, Cairo, Egypt.—p. 431.
*Pharmacologic Properties of Periplocin. M. H. MacKeith, Oxford, England.—p. 449.
Biologic Significance of Cystine and Glutathione. I. Mechanism of Cyanide Action. C. Voegtlin, J. M. Johnson and H. A. Dyer, Washington, D. C.—p. 467.

Iodine Content of Cerebrospinal Fluid.—The results obtained by Campbell and Snodgrass show that it is possible to produce and to maintain a definite increase in the iodine content of the cerebrospinal fluid by the administration of potassium iodide by mouth, and that this concentration can be markedly increased by the administration of sodium iodide intravenously. It is suggested by the authors, therefore, that at some period in the treatment of syphilis of the central nervous system a series of intravenous iodide injections can be employed usefully, but the more powerful intermittent action of intravenous iodide must be maintained throughout by the ordinary oral administration. Arsphenamine substitutes can be dissolved in the sodium iodide solution, so that only one intravenous injection is necessary, when iodide is combined with organic arsenic medication.

Effect of Morphine on Alimentary Canal.—The results reported by Plant and Miller are directly opposed to the current conception that morphine decreases intestinal activity—a conception that frequently forms the basis of its clinical use. Yet some of the uses of morphine and the results obtained are more easily explained on a basis of increased tone and contractions. This applies to intestinal hemorrhage and to diarrheas accompanied by relaxation, as well as conditions in which distention and pain are due to loss of tone. The relief of many forms of intestinal pain of diarrhea and the production of constipation by morphine cannot be explained on the basis of these results alone. Other factors are concerned, such as effects on the central nervous system (pain perception), on the stomach and lower bowel and on secretion and absorption.

Effect of Pituitary Extract and Histamine on Muscle.—The results of Macht's experiments point to the fact that both pituitary extracts and histamine produced the same effects on the muscular contraction of the fundus and the trigone of the bladder and acted directly on muscle substance and not on nerve terminals. This would tend to give additional evidence to that already adduced by Abel and his collaborators in regard to the nature of the pituitary principle.

Response of Auerbach's Plexus to Drugs.—Additional evidence is presented by Gasser that Auerbach's plexus is not necessary for pendular movements of the small intestine and that, with the exception of nicotine, certain alkaloids and bases produce their effects by direct action on the muscle fibers and not through the plexus.

Effect of Arsenic on Lymph Vessels.—The lymph experiments made by Petersen and Hughes offer some evidence that arsenic injections cause alterations in the permeability of the capillaries. With small doses there is first an increase in permeability (stimulation) seemingly involving only water exchange. This is followed by a diminution that may persist for a period of several hours and probably coincides with the period of water retention commonly observed with arsenic medication. Solution of potassium arsenite (Fowler's solution) stimulates the endothelium. With small doses the effect is rapidly reversed. With larger doses the reversal is not so apparent and an increased lymph flow, with increased protein, sugar, phosphates and bile may continue for a considerable period of time.

Action of Periplocin.—Periplocin is a glucoside occurring in *Periploca graeca*, a plant which belongs to *Asclepidea*, and which is indigenous to the Black Sea districts. MacKeith asserts that it deserves a place in the digitalis group of glucosides, for it has the properties characteristic of that group, in that it increases the tone and the contractility of cardiac muscle and the tone of arterial muscle, while excessive doses produce cardiac irregularity and systolic arrest of the heart. The only point in which periplocin differs significantly from the other members of the digitalis group is in its small (or absent) stimulant effect on the vagus center.

Maine Medical Association Journal, Portland

17: 115-129 (July) 1926

Treatment of Suppurative Conditions of Lung. W. Whittemore, Boston.—p. 117.

Medical Journal and Record, New York

124: 129-188 (Aug. 4) 1926

Allergy. E. M. Robinson, New York.—p. 129.
Diverticulum of Cardia of Stomach. F. Pearlstein, West New York, N. J.—p. 134.
*Diagnostic Value of Hypo-Acidity. W. W. Sager and H. R. Hartman, Rochester, Minn.—p. 136.
Gallstones. E. L. Kellogg, New York.—p. 138.
Rejuvenation. M. W. Thewlis, New York.—p. 140.
Affections of Epiphyses Peculiar to Second Decade. I. Balensweig, New York.—p. 144.
Psychologic Factors in Treatment of Disease, Especially Paralyses in Childhood. H. Keller, New York.—p. 148.
Factors Facilitating Epileptic Seizures. A. Gordon, Philadelphia.—p. 151.
Use of Sedatives, Tonics, Endocrines, Etc., in Reeducational Training Treatment of Epileptic. L. P. Clark, New York.—p. 154.
Pedophilia. E. E. Hadley, Washington, D. C.—p. 157.
Treatment of Psychoneuroses by Removal of Focal Infection. E. C. Dudley, Chicago.—p. 162.
Neurosis and Total Personality. F. Alexander, Berlin.—p. 165.

Hypo-Acidity.—Four hundred and twenty cases in which hypo-acidity was present were analyzed by Sager and Hartman, all other factors being disregarded. One hundred and fifty-eight cases were of functional nervous disease. There were sixty-seven cases of cholecystitis; seventeen of unquestioned malignant disease; twenty-eight of peptic ulcer; eighteen of chronic constipation; eleven of appendicitis, and thirteen of syphilis. No cases of pernicious anemia were found. The remaining cases were scattered and probably only accidental, having no relationship to the hypo-acidity other than a coincidental one.

Military Surgeon, Washington, D. C.

58: 593-704 (June) 1926

Malarial Fevers in U. S. Army and at Selected Stations. A. G. Love.—p. 593.
Trachoma in Russia. W. R. Dear.—p. 611.
Medical Service in France. B. K. Ashford.—p. 620.
Experimental Field Office Set. J. P. Fletcher.—p. 636.
Dermatitis Herpetiformis: Case. A. A. McDaniel.—p. 662.

Occupational Therapy and Rehabilitation, Baltimore

5: 1-80 (Feb.) 1926

Vocational Aspect of Occupational Therapy. H. J. Kefauver, Washington, D. C.—p. 1.
National Program of Vocational Rehabilitation of Disabled Civilian. J. A. Kratz, Washington, D. C.—p. 25.
Occupational Therapy as Applied to Orthopedic Cases. J. D. Adams, Boston.—p. 35.
Developing Rochester's Community Workshop. R. H. Greeman, Rochester, N. Y.—p. 43.
Sale of Occupational Therapy Products Without Commercializing Department. B. E. Lindberg, St. Paul.—p. 55.

Ohio State Medical Journal, Columbus

22: 585-656 (July) 1926

Shall Cancer be Treated by Radiation or Surgery? H. J. Means, Columbus.—p. 589.
Value of Blood Settling Time in Diagnosis, Prognosis and Treatment. C. DeCourcy and O. Thuss, Cincinnati.—p. 593.
*Use of Sodium Ricinoleate Toxin (Larson) in Immunization Against Scarlet Fever. R. G. Perkins and E. Megrail, Cleveland.—p. 599.
Economic and Social Aspect of Venereal Disease. G. F. McKim and P. G. Smith, Cincinnati.—p. 601.
Heredity and Sterilization. F. L. Rhodes, Massillon.—p. 604.
Social and Economic Problems Affecting Medical Practice. L. L. Bigelow, Columbus.—p. 606.

Immunization Against Scarlet Fever by Sodium Ricinoleate.—In a series of 1,500 children of various ages, examined by Perkins and Megrail, 361 were found susceptible by the Dick test, by the use of two test toxins, checked against each other, of known susceptibles and insusceptibles. Among sixty-six susceptible adults, eight showed a negative Dick test from three to six weeks after a single dose of 3,000 units of Larson toxin. Among the 324 children available for retesting, 210 gave a negative Dick test from two to five weeks after 3,000 units of Larson toxin, while sixty-two others showed faint or doubtful reactions.

Philippine Islands Medical Association Journal, Manila

6: 183-210 (June) 1926

Public Health Value of Kahn Precipitation Test: Yaws. E. V. Pineda and H. W. Wade, Culion.—p. 183.
*Horse Serum Treatment of Carbunculosis and Similar Affections. F. G. Kee and J. Santillan, Manila.—p. 188.
Ankylostomiasis. III. Hookworm Counts and Classification Among Hospital Patients. C. Manalang, Zamboanga.—p. 192.
Congo Red and Hydrochloric Acid or Nitric Acid Fuming Method for Treponema Pallidum Examination. L. Udasco, Manila.—p. 196.

Horse Serum Treatment of Carbunculosis.—Kee and Santillan have given horse serum by intravenous injection to eleven patients with carbuncles or furuncles. When the lesions have been of small size they have given more than three injections. Twenty-four hours after the first injection, the edges of the wound usually become inflamed—raised, warm and reddened. After the second injection usually the inflammation subsides; the fever which may be present on admission drops, and a sharp line of demarcation between the sound and the dead tissue is formed. Then finally the slough falls off, leaving a healthy granulating cavity. Then balsam of Peru is applied daily. No untoward effects have been experienced thus far in giving the injection, except that sometimes a slight feeling of weakness, dizziness and nausea follows. These sensations subside, however, within from ten to fifteen minutes. The fever that occasionally appears after the injection was never of an alarming character and subsided after twenty-four hours. Pain, which is an important subjective symptom, is usually markedly relieved after forty-eight hours.

Philippine Journal of Science, Manila

30: 153-274 (June) 1926

Hugh Cuming's Letters to Sir William J. Hooker. E. D. Merrill, Berkeley, Calif.—p. 153.
Stony Layer of Coconut (Cocos Nucifera Linnaeus). J. B. Juliano, Los Baños, Laguna.—p. 187.
Deodorization of Coconut Oil. W. L. Brooke, Manila.—p. 201.
Mineral Cordage Oils. W. L. Brooke, Manila.—p. 213.
*Blood Chemistry in Leprosy. I. Nonprotein Nitrogenous Substances, Sugar and Chloride. E. M. Paras, Culion Leper Colony.—p. 219.
Collembola from Philippines and New Caledonia. E. Handschin, Basel, Switzerland.—p. 235.
Diocalandra Taitensis (Guerin) and Other Coconut Pests of Fanning and Washington Islands. W. B. Herms, Berkeley, Calif.—p. 243.

Blood Chemistry in Leprosy.—A study of the results collected by Paras by chemical analysis of the blood of 100 lepers brings out the following facts: No regular correspondence can be traced between the blood examination and the duration, extent, or type of leprosy, or the antileprosy treatment. The average values for nonprotein nitrogen, uric acid, creatinine, and sugar for all of the leper groups were somewhat high, although many individual cases showed normal values. The average values for nonprotein and urea nitrogen are markedly high, not only in the group of lepers with nephritis, but also in the group with lepra reactions. The group averages for urea nitrogen are normal except as stated above, and those for chloride are normal throughout.

South Carolina Medical Association Journal, Greenville

22: 119-138 (June) 1926

*Hypertrophy of Prostate: Intussusception. W. B. Sparkman, Greenville.—p. 120.
Diet and Nutrition of Child. W. Weston, Columbia.—p. 121.
Etiology and Symptomatology of Hyperthyroidism. R. Wilson, Charleston.—p. 127.
Colored Female Roper Hospital. T. E. Bowers, Charleston.—p. 131.
Importance of Ophthalmic Aspects of General Medicine. E. Jackson, Denver.—p. 134.

Multiple Intussusception.—The intussusception in Sparkman's case began at the cecum, the ileum being invaginated together with the cecum and the appendix, the intussusceptum extending clear down into the rectum. Another intussusception in the opposite direction was present at the splenic flexure, about 8 inches (20.32 cm.) of descending colon being invaginated into the transverse.

FOREIGN

An asterisk (*) before a title *indicates that* the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Japanese Surgery, Kyoto

3: 1-200 (July 20) 1926

Nervous Control Over Blood Flow and Metabolism in Peripheral Tissues, Warmed or Cooled by Application of External Heat or Cold. Y. Hori.—p. 1.
Effect of Sympathectomy on Muscle Atrophy Result of Constricting Dressings. K. Iwata.—p. 74.
Skiagram of Duodenum. S. Nakagawa and T. Yuki.—p. 79.
Change in Blood Flow in Extremities as Result of Interruption of Peripheral Nerve Conduction. S. Yoshitomi.—p. 86.
Influence of Resection of Ganglion with Sympathetic Trunk on Consolidation of Fracture. S. Uno.—p. 106.
Distribution of Nonmedullated Fibers in Peripheral Nerves and Their Bilateral Crossing. N. Yamasaki.—p. 122.

British Journal of Dermatology and Syphilis, London

***38:** 273-322 (July) 1926*

*Lupus Erythematosus with Acute Exacerbation; Erysipelas and Phlegmon Capitis Followed by Death. H. Sundt.—p. 273.
*Concurrent Herpes Zoster and Varicella. A. C. Roxburgh and P. H. Martin.—p. 286.

Lupus Erythematosus in Child.—Sundt's patient, a child, exhibited a pronounced degree of lupus erythematosus without any tuberculosis in its nearest relations and with no tuberculous antecedents. The disease, after being present for five years, suddenly, for some cause or another not yet clear, took a grave turn and made very rapid progress. A severe erysipelatous inflammation led to coma and death, and at the postmortem examination no sign of present or past tuberculosis could be discovered.

Concurrent Herpes Zoster and Varicella.—Roxburgh and Martin relate the case of a man, aged 41, who developed a pronounced eruption of herpes zoster on the left side of his neck and head in areas supplied by the second and third cervical nerves. A few days later, a few vesicles appeared on the trunk and one or two on the legs. These were diagnosed as varicella eruptions. Recovery was uneventful. During the period of prodromal pain, the patient was spending the week-end with friends. Some hours before he left, a girl, aged 18, arrived, who from then on occupied the bedroom in which the patient had slept. Fourteen days later, she developed typical varicella with extensive distribution, including the scalp and palate. She had had neither herpes zoster nor varicella before or, as far as she is aware, had she been in contact with any case of varicella. Fifteen days later a child of 3½ years living in the house also developed varicella.

British Journal of Radiology, London

31: 239-282 (July) 1926

Radiologic Exploration with Iodized Oil. J. A. Sicard and J. Forestier.—p. 239.
Chronic Intermittent Duodenal Stenosis. N. Ratkoczi.—p. 253.
Present and Future of Radium and Roentgen-Ray Treatment. F. Tomanek.—p. 255.
Treatment of Leukemia by Prolonged Radiation. F. Tomanek.—p. 257.
Stimulating Dose. E. H. Zweifel.—p. 259.
Practical Application of Encephalography. S. Fraenkel.—p. 264.
Effect on Cell in Isolated Radiation of Blood. S. Fraenkel.—p. 266.
Action of Ultraviolet and Luminous Rays in Therapy. C. Sonne.—p. 268.

British Medical Journal, London

2: 103-144 (July 17) 1926

Insulation of Nervous System. W. Trotter.—p. 103.
Spirochetosis Icterohemorrhagica in Norfolk. F. W. Burton-Fanning and A. J. Cleveland.—p. 108.
*Thyroid and Manganese Treatment of Pneumonia. H. W. Nott.—p. 109.
Mastoiditis Complications. W. M. Munby anad R. E. Jowett.—p. 111.
Epidemic Encephalitis with Severe Involvement of Spinal Cord. J. A. Wright.—p. 115.
Collosol Manganese in Furunculosis. M. L. Young.—p. 115.
Quinine Poisoning. H. Gooch.—p. 115.
Poisoning by Tobacco Applied to Skin. J. Ritchie.—p. 116.

2: 145-176 (July 24) 1926

Medical Practitioner and Public. R. G. Hogarth.—p. 145.
Prevention of Insanity. G. M. Robertson.—p. 151.
Dark-Ground Illumination of Tissue Cells Cultivated "In Vitro." T. S. P. Strangeways and R. G. Canti.—p. 155.
Reducing Certain Dislocations of Shoulder. V. Newton.—p. 157.

Thyroid and Manganese Treatment of Acute Pneumonia.—The solution used by Nott is made by adding 2 grains

(0.13 Gm.) of pure potassium permanganate to 1½ pints of water, which should be comfortably hot. From 3 ounces to half a pint are used on each occasion, according to the age of the patient. The fluid should be administered very slowly by means of a funnel and small tube, or by a Higginson's syringe, and the injections repeated from two and a half to four hours during the first twenty-four to thirty-six hours. The length of the interval between the injections depends on what day of the disease the case comes under treatment, much in the same way as the dosage and frequency of the subcutaneous injections of serum are judged in the treatment of diphtheria. In ordinary cases, if the treatment is begun on the first or second day of the disease, intervals of three or four hours can be allowed; but when beginning on the fourth or fifth day, especially when the symptoms are severe, the intervals may be reduced to two and a half or even two hours. One must be guided also by the quantities the patient is able to retain on each occasion, shorter intervals being necessary when the fluid is quickly returned. Once the temperature reaches normal in adults and older children, the injections are reduced to two a day for three days, and once a day for three more days, when they can be discontinued; or they can be replaced to the advantage of some by giving the combined thyroid and manganese cachets for a week or so. But in infants and younger children, the injections should be continued twice daily for at least ten days after the temperature has reached normal, as there is a tendency to recurrence if they are given up too early.

China Medical Journal, Shanghai

40: 603-698 (July) 1926

Blood-Sucking Arthropods of Medical and Veterinary Importance in China. W. S. Patton—p. 603.
Smallpox. E. L. Marsh.—p. 613.
Neuropsychiatry in China. J. L. McCartney.—p. 617.
Biochemical Trend in Medicine. F. R. Dieuaide.—p. 627.
*Determination of Fat in Soy Bean Milk. A. A. Horvath.—p. 631.
Sex-Ratio at Birth of Chinese. F. Oppenheim.—p. 634.
Blood Pressure of Healthy Individuals in Shaohing. Y. Y. Ying.—p. 641.
Case of Amebiasis of Lung. G. A. M. Hall.—p. 644.
Problems of Tracheobronchoscopy and Esophagoscopy. T. Matsui.—p. 646.
Training of Midwives. E. Rowley.—p. 655.
Bronchospirochetosis. L. S. Huizenga.—p. 658.

Determination of Fat in Soy Bean Milk.—A new method for the determination of fat in soy bean milk is presented by Horvath. It consists in autoclaving the soy bean milk in an equal volume of a 20 per cent sodium chloride solution, followed by determination of the fat by the Babcock method.

Edinburgh Medical Journal

33. 466-532 (Aug.) 1926

Failing Heart. J. Cowan.—p. 465. (To be Cont.)
*Cleft Sternum and Ectopia Cordis. D. M. Greig.—p. 480.

Cleft Sternum and Ectopia Cordis.—The literature on this subject is reviewed by Greig. In eight cases out of thirty-eight that exclude the twenty cases of simple cleft sternum, extensive malformation of the heart and large blood vessels existed. In one case the heart was trilocular, the atriums forming one cavity, and in one case the trilocular heart had a single ventricle. In three cases, two described by Breschet and one by Wilson, the heart was bilocular, and it is astonishing that these children survived birth seven days, one month, and six weeks, respectively, while the two children with trilocular hearts survived only four hours and twenty-four hours. In no fewer than six of these serious heart derangements were there two superior venae cavae present. In four instances the combination of a small aortic opening associated with a perforation at the base of the interventricular septum and a large opening for the pulmonary artery indicated a defective development of the bulbus cordis as described by Keith.

Fukuoka Medical Journal, Fukuoka, Japan

19: 467-589 (July) 1926

Experimental Investigations on Surgical Treatment of Nephritis. K. Tokuyama.—p. 590.
Partition of Sodium Chloride and Residual Nitrogen in Experimental Kidney Lesions in Guinea-Pigs. Y. Morihisa.—p. 590.

Irish Journal of Medical Science, Dublin

6: 345-392 (Aug.) 1926

Fats and Fat-Soluble Vitamins. W. J. E. Jessop.—p. 349.
Treatment of General Paralysis of Insane by Malaria. G. Bewley.—p. 358.
Italian Surgery. S. Pringle.—p. 365.
Danger of Sepsis About Lips. W. I. de C. Wheeler.—p. 369.
Fracture of Scaphoid. A. B. Clery.—p. 372.
Multiple Myomas of Abdomen Originating in Colon. H. S. Meade.—p. 373.

Japan Medical World, Tokyo

6: 49-78 (March 15) 1926

Action of Ammonia on Lungs. II. A. A. Horvath.—p. 49.
*Prophylaxis of Kakke (Beriberi); Kakke of Chosenese. K. Shiga.—p. 59.
Toxic Action of Sarcosporidiotoxin. S. Sato.—p. 62.
Biochemical Racial-Index of Ainu, Gilyak and Orokko in Karafuto (Saghalien). T. Kishi.—p. 65.

Kakke.—Kakke is a metabolic disease due to the absence of vitamin B in food. The fact that all the cardiac signs of kakke are reproduced in the experimental condition of avitaminosis seems to indicate, in Shiga's opinion, the existence of identity of etiology as well as the essential nature of both conditions.

Journal of Anatomy, London

60: 345-492 (July) 1926

Innervation of Heart. H. H. Woollard.—p. 345.
Asymmetry in Hermaphrodite Pigs. J. R. Baker.—p. 374.
Description of Human Embryo of Twenty-Two Paired Somites. A. Girgis.—p. 382.
Frenula Valvulae Coli. A. H. Rutherford.—p. 411.
Abnormality of Occipital Bone: Abnormal Bony Formation Surrounding Foramen Magnum. C. F. T. East.—p. 416.
Example of Muscle Scalenus Minimus. L. R. Shore.—p. 418.
Case of Multiple Anomaly of Phalanges of Hands in Girl Aged 15. L. R. Shore.—p. 420.
Mammalian Oculomotor Nucleus. W. E. Le Gros Clark.—p. 426.
Development of Brain of Brown Bear. R. Anthony and J. Botez.—p. 449.
Fusion of Carpal Elements. A. E. Cave.—p. 460.

Journal of Tropical Medicine and Hygiene, London

29: 145-156 (May 15) 1926

Case of Bronchomycosis. N. Chyurlia.—p. 145.
*Leprosy in Fourteen Months Old Child. E. A. Neff.—p. 146.

Leprosy in Child.—Neff reports the case of a child whose mother had a particularly active nodular leprosy which had not responded to treatment. The confinement was normal, as was the puerperium. Almost immediately following her confinement, the mother had a very severe reaction with fresh and extensive infiltration of the skin. This was followed shortly by two or three milder reactions. On account of the child's delicate state of health during this time, she was allowed to nurse it until this was precluded on account of leprotic infiltration of the nipples. When the child was 14 months old, a papulonodule was noticed in the center of her left cheek. Smears showed all fields filled with acid-fast bacilli in characteristic grouping. Nasal smears were negative. Under treatment the disease has remained stationary and inactive, and bacteriologically negative. The initial nodule shows as a typical scar.

29: 169-184 (June 15) 1926

Analysis of Sprue Stools. H. B. Newham.—p. 169.
*Leptospira: New Habitat of Free-Living Forms. A. C. Coles.—p. 170.
Bilharzia Problem in South Africa. F. G. Cawston.—p. 177.

Detection of Living Leptospira.—Coles describes a rapid and easy method of detecting living *Leptospira*. The only real difficulty is to clean the slide so thoroughly that a drop of water can be spread over its surface. For this purpose he keeps on the table a pot of paste made up of whiting (pulv. cretae prep.) and water, and rubs this on the surface of the slide, and then polishes it with a clean cloth. If the method is successful the water will spread over the surface in a thin and uniform layer. If, as often happens, the water runs up into lenticular globules, it is impossible to examine. On one slide, a mark is made with a grease pencil toward the end. This slide is placed on the stage of the microscope, which may be inclined at a comfortable angle. With the 8 mm. objective and ocular no. 2, a good, dark background is obtained, with the tube of the microscope pulled out to the correct extent for an uncovered object When everything is in adjustment, the slide is removed. On this slide or on another clean one, a drop of the material containing *Leptospira* is spread in as thin a film as possible. This is examined at once under the dark ground obtained as above by a dry condenser with a stop and bull's eye, and the spirochetes will appear remarkably clear and sharp, much better than when examined with a coverglass and shorter tube Coles' observations seem to point very clearly to the fact that *Leptospira* are present in the damp, dead, decaying leaves as such, and not in a spore or granule stage only. *Leptospira* disappear from the infusion as soon as bacterial and other putrefactive changes occur.

29: 185 200 (July 1) 1926

Malaria Control W F Decks —p 185
Gongylonema of Cattle H A Baylis —p 191
Epidemic of Cholera Among Ballast Train Coolies in Bengal. E N. D Repper —p 196

29: 201 216 (July 15) 1926

Mycologic Method to Identify Various Sugars and Other Carbon Compounds A Castellani and F F Taylor —p 201
*Prevention and Treatment of Cholera by Essential Oils J W Tomb —p 210.

Treatment of Cholera by Essential Oils.—The mixture of essential oils recommended by Tomb for the treatment of cholera contains 5 minims (0 3 cc.) each of oils of anise, cajaput and juniper, 15 minims (1 cc) of aromatic sulphuric acid and 30 minims (2 cc.) of spirit of ether. The dose is 1 drachm (4 cc.) every half-hour or one-half drachm (2 cc) every quarter-hour in water until 1 ounce (30 cc.) has been given, and thereafter 1 drachm every hour until complete recovery has taken place. From the records of hundreds of cases treated by Tomb during the last three years it is stated that if administered according to directions before collapse has set in, the mixture is capable of curing 95 per cent of cases, intravenous isotonic saline injections alone or combined with alkalis in the form of sodium bicarbonate, 160 grains (10 Gm) to the pint (475 cc.), as recommended by Sellands, being necessary in those cases only in which for any reason collapse ensues.

Lancet, London

2: 107 160 (July 17) 1926

Insulation of Nervous System W Trotter —p 107
*Immunity in Relation to Transplantable Malignant Tumors T. Lumsden. —p 112
*Psychic Traumas (Mental Accidents) A. E Davis —p 117.
*Torsion of Gallbladder G P B Huddy —p 120
Cases of Long-Standing Drug Addiction. S Park —p 121.
Case of Acholuric Icterus G Hadfield and T. F. Hewet —p 121.
Acute Intussusception in Adult F W Widgery —p 122

Immunity in Relation to Transplantable Malignant Tumors.—It is confirmed by fifty cases in rats studied by Lumsden that when a rat bears a J R sarcoma on each hind foot, the cure of one by injection of antiserum is invariably followed by the regression of the other untreated tumor. Such a rat is absolutely immune to J R sarcoma, and test inoculations do not produce tumors, yet sarcoma cells grow freely in vitro in the serum of such a rat even when by repeated weekly injections the animal has been "hyperimmunized." If the tissues (spleen, *testis*, salivary gland) of such a hyperimmunized rat are cultured in the same drop of this rat's serum as a fragment of sarcoma, both normal and malignant cells flourish and intermingle without apparent harm to either. Malignant cells were found to be more susceptible than any of the normal tissue cells to each of the antiserums tested (except to antirat kidney serum). The serum of many normal rabbits was found lethal to cancer cells, and only to a lesser degree injurious to normal mouse tissues.

Psychic Traumas.—As against Freud's dogmatic determinism, Davis advances his theories as to the causation of the great majority of neuroses 1 The unbearable idea or wish arises in consciousness, and not in the unconscious or in the infantile sexual. 2 The unbearable idea is not repressed into the unconscious by an intrapsychic censor. It is deliberately suppressed by conscious effort into the subconscious—into present unawareness—not deeper. 3 When the complex is laid bare, it is evident that the patient must have been aware of it *at some period*, if not throughout. 4. The causes are therefore to be sought for in adult life, or in youth, rarely in childhood, and *only exceptionally*, if ever, in infantile sexuality. 5. The majority of neuroses are founded on moral or physical fear. 6 The fear may be an instinctive protective reaction. 7. The fears are frequently due to external causes (chance) and may be described as psychic traumas or mental accidents

Torsion of Gallbladder.—The thirteenth case of torsion of the gallbladder now on record is reported by Huddy The diagnosis in this case had been abscess of the appendix.

Medical Journal of Australia, Sydney

2: 1 32 (July 3) 1926

Some Heterodox Opinions A E Taylor —p 1.
Application of New Definition of Normal Labor to Clinical Study of Obstetrics· New Outlook on Midwifery M C De Garis —p 6
Acne Vulgaris E H Molesworth —p 10
Three Cases of Paratyphoid Fever R J. W. Smith and G W. Ashton. —p 12
Ureteritis Cystica J B Cleland —p 13
Amyotonia Congenita K A Stephenson —p 13
Case of Acute Myelitis W P White —p 14
Cerebral Fat Embolism I H. Cowling —p 14.

Medical Journal of South Africa, Johannesburg

21: 295 326 (June) 1926

Gynecology in General Practice R W B Gibson —p 296
Gonorrhea in Male B Bernstein —p 301
Enteric Fever Pathology and Bacteriology A S. Strachan —p 306
Id Symptoms and Treatment A. Bloom —p 307
Id Manifestations Peculiar to Natives A Frew and H T H Butt —p 309.
Id Public Health Aspect A J. Milne —p 311.
Cancer L Gordon —p 314

National Medical Journal of China, Shanghai

12: 203 277 (June) 1926

*Ovarian Cysts (Excluding Dermoids) J S Chu —p 203
Bismuth Treatment of Neurosyphilis C H Tyau —p 222
Arsphenamine and Neo Arsphenamine Reactions. Side Effects and Their Managements T L Li —p 232
*Fracture of Elbow Forty Cases L Woo —p 240
*Acidosis Following Calcium Chloride Therapy. C H Chien —p 246

Ovarian Cysts.—Three cases are reported by Chu: (1) a huge, twisted, multilocular ovarian cyst, with marked ascites, (2) a totally adherent, multilocular ovarian cyst, and (3) resection of a follicular cyst during pregnancy, without interruption of the pregnancy.

Fracture of Elbow.—The forty cases analyzed by Woo represent an incidence of 4 per cent of all fractures. The most frequent type was the supracondylar, of which there were seventeen cases Good results from treatment are reported in thirty-eight cases.

Acidosis Following Calcium Chloride Therapy.—In a case of chronic nephritis, probably of the interstitial type, associated with arteriosclerosis, hypertension and myocardial insufficiency, reported by Chien, prompt diuresis and temporary clinical improvement followed the administration of calcium chloride, corroborating what has been claimed for this drug, namely, that it is a valuable diuretic

Sei-I-Kwai Medical Journal, Tokyo

45: 1 22 (June) 1926

Changes in Hypophysis Induced by Early Castration of Rats S Nukariya —p 1
Metabolism of Rana Nigromaculata H Nagaoka —p 15
Active Principle of Heidenhein's Lymphagogue of First Class K Aoki —p 17
Bioluminescence II Nature of New Luminous Bacterium, Microspira Phosphoreum (Yasaki) Y. Yasaki, M Nishio, A Ichikawa, R. Majima and O Ishikawa —p 20
Studies on Secretion T. Nishikawa —p 22.

Tubercle, London

7: 473 520 (July) 1926

Treatment of Pulmonary Tuberculosis by "Sanocrysin" B R Clarke —p 473.
Id L S T Burrell —p 479.
Id S. L Cummins —p. 486.

Annales des Maladies Vénériennes, Paris

21: 401-480 (June) 1926

- *Superinfection with Syphilis. D. L. Voronoff.—p. 401.
- *Irreducible Serologic Reactions. H. Gougerot and E. Peyre.—p. 412.
- *Endocrine Derangement in Congenital Syphilis. Récamier.—p. 421.

Superinfection with Syphilis.—The inguinal glands presented an appearance as with a primary syphilitic lesion, parallel to the development of an ulcer on the penis from superinfection during the tertiary stage. Three months after he healing of the ulcer, a gummatous ulcer developed on the pharynx. There had been no active manifestations of the old syphilis for five years. This case conflicts with the prevailing theories on superinfection, and Voronoff has been unable to find an analogous case on record.

Irreducibly Positive Wassermann Reaction.—Two cases are analyzed in which it proved impossible by intensive treatment to render the Wassermann test negative during years. But there were at one or several times a brief period in which all the serologic tests were negative. No cause for these fluctuations could be discovered.

Endocrine Derangement from Congenital Syphilis. — Récamier has made a special study of endocrine derangement in twenty-one women and girls with congenital syphilis. Serologic tests were often misleading, but mercurial treatment proved the touchstone and cure. In the differential diagnosis, lassitude, especially in the morning, headache, sometimes at night, most frequent before the menses, symptoms suggesting neurasthenia, depression, and vague disturbances which others regard as imaginary keep these patients unhappy. Supplementary organotherapy is indispensable, whether the indications are predominantly for ovarian or thyroid treatment, or the disturbances indicate that several glands are involved. The endocrine disturbances are aggravated by puberty, childbirth and the menopause, or they may start first with a childbirth. When such women marry a man free from syphilis they may have one daughter, but no other children, and the stigmata of syphilis may be more evident in the child than in the mother.

Annales de Médecine, Paris

19: 553-687 (June) 1926

- *The Tubercle Bacillus. A. Calmette and J. Valtis.—p. 553.
- Etiology of Pulmonary Tuberculosis in Adults. L. Bernard and L. Denoyelle.—p. 561.
- Tuberculin Test in Measles. R. Debré and K. Papp.—p. 576.
- *Pregnancy Cholesteremia. M. Salomon and F. de Potter.—p. 587.
- Perforations in Artificial Pneumothorax. L. Bernard et al.—p. 609.
- Curable Forms of Progressive Tuberculosis in Infants. L. Bernard and J. Paraf.—p. 638.
- Exploration of Respiration. L. Binet and H. R. Olivier.—p. 666.

The Virulent Filtrable Elements of the Tubercle Bacillus.—Calmette and Valtis relate experiments, made in collaboration with Nègre and Boquet, in which gravid guinea-pigs were inoculated with filtrates of tuberculous products or cultures. It appeared that the filtrates contained virulent elements, able to attack the fetus, after having passed through the intact placenta. The fetal lesions were localized almost exclusively in the subhepatic lymphatic glands. Characteristic acid-resisting tubercle bacilli were found there. The thinning of the endothelial wall of the placenta at the end of gestation in these animals might favor penetration. This anatomic phenomenon may be less pronounced in the bovine and human species. However, it is probable that intra-uterine contamination of a calf or infant is not an exceptional occurrence. It probably proves rapidly fatal, without any well defined lesions in any organs.

Pregnancy Cholesteremia in Tuberculous Women.—Comparative estimation of the blood cholesterol was made by Salomon and de Potter on eighty-eight pregnant women; thirty of them were healthy and fifty-eight had pulmonary tuberculosis. The amount of cholesterol in pregnancy and after childbirth was about normal with nonprogressive tuberculosis. It was reduced in the active cases, especially in the rapidly progressing form accompanied by fever. Notable hypocholesteremia persisting after childbirth indicates a fatal issue before long. Further research showed that there is no connection between cholesteremia, arterial pressure and anergy to tuberculin, as revealed by the skin test.

Archives d'Ophtalmologie, Paris

43: 321-384 (June) 1926

- *Eyeball as Autograft. L. Weekers and J. Lambrecht.—p. 326.
- *Treatment for Glaucoma. A. F. Alonso.—p. 330.
- Congenital Exuberant Growth of Circulus Iridis Minor. Koby.—p. 349.
- The Cornea-Iris Angle and the Aqueous Humor. F. Benoit.—p. 352.

The Eyeball as Autograft After Avulsion.—Accidental injury of the left cheek caused complete expulsion of the eyeball from the orbit. It was held only by a threadlike band of the conjunctiva, all the muscles and the optic nerve being totally severed. The eye was immediately replaced in the orbit, then covered with a compressive dressing. Normal nutrition evidently continued in the injured eye. Its aspect and the anatomic structure appear intact up to four months (to date). These results may be definite. The sight is lost.

Treatment of Glaucoma.—Alonso's article was summarized, Aug. 28, 1926, p. 711, when published elsewhere.

Bulletin de la Soc. des Sciences Méd., Montpellier

7: 255-298 (April) 1926. Partial Index

- *Acute Tuberculous Meningitis. Vedel et al.—p. 266.
- Advantages of Wet Cupping in Treatment of Furuncles and Carbuncles. Lauze.—p. 277.
- Kaolin Technic for Blood Grouping Tests. Falgairolle.—p. 283.

Acute Tuberculous Meningitis with Recovery. — Videl, Giraud and Puech report that a young woman developed an acute, severe, febrile meningeal syndrome. The cerebrospinal fluid was limpid but contained cells, mostly lymphocytes, and an acid-resisting bacillus which induced typical tuberculous lesions in a guinea-pig inoculated. Two of the patient's brothers and two cousins had died from tuberculous meningitis. The fifth day the whole meningitic picture disappeared, and the recovery was complete, with no signs of recurrence during the thirty-two months to date although the young woman has acquired syphilis in the interim. They explain the case as an ephemeral tuberculous meningitis, the organism conquering the invading bacillus. In the sixty cases of alleged recovery from tuberculous meningitis on record, in fourteen inoculation of guinea-pigs was positive but no tubercle bacilli could be detected with the microscope; in seven both methods of examination were positive, as likewise in the case here described. Fully 25 per cent of the patients are known to have succumbed to tuberculosis later, and the true figure is probably much higher as it has been impossible to trace them all.

Bulletins de la Société Médicale des Hôpitaux, Paris

50: 1155-1202 (July 2) 1926

- *Emotional Asthma. R. Bénard and E. Joltrain.—p. 1155.
- Puriform Syphilitic Meningitis. P. Lechelle et al.—p. 1160.
- Pulmonary Gangrene with Cancer. M. Renaud.—p. 1168.
- Metastases of Cancer of the Kidney. P. Harvier and A. Lemaire.—p. 1169.
- Intradural Hematoma of the Brain. P. Harvier et al.—p. 1172.
- Liver Functioning in Azotemia. A. Rémond and H. Colombiès.—p. 1174
- Semeiologic Significance of Glycorrhachia. Fontanel et al.—p. 1178.
- *Serum Sickness and the Thyroid. V. de Lavergne.—p. 1182.
- Autovaccine in Treatment of Cerebrospinal Meningitis. Courtois-Suffit and G. Garnier.—p. 1185.
- Splenic Anemia. N. Fiessinger and H. R. Olivier.—p. 1193.

Emotional Asthma and Hemoclastic Shock.—Bénard and Joltrain treated a woman, aged 33, with slight exophthalmic goiter and asthma. The first paroxysm of asthma occurred at the age of 18 after a severe fright. An experimental violent emotion induced hemoclastic shock followed by a paroxysm of asthma. Disturbance of the neurotonic equilibrium and amphotonia were manifest. The oculocardiac reflex pointed to sympathicotonia before the emotional shock, to vagotonia after the shock.

Serum Sickness and the Thyroid Gland.—De Lavergne's observations were made on thirty-five men who had reacted with an eruption to serotherapy. In twenty-eight, an increase in the size of the thyroid preceded by a day, or occurred simultaneously with manifestations of serum sickness. In nineteen, the increase was 1 cm. or less; in nine, 1.5 to 2 cm. The thyroid returned to normal as soon as the morbid phenomena disappeared. Functional tests of the thyroid revealed enhanced activity. An upset in the balance of the sympathetic system and stimulation of the thyroid function are among the clinical phenomena of serum shock.

The pain is spontaneous, extremely severe; it may radiate to the entire chest, the back, epigastrium, both upper limbs, neck and chin. In their cases it persisted with no free intervals till death, five to ten days from the onset. It is associated with failure of the myocardium, evidenced in rapid fall of the arterial tension, involving both systolic and diastolic pressures, and in disturbances of the cardiac rhythm, characterized by gradual acceleration of the pulse, extrasystoles, and gallop or alternating rhythm. Improvement is not impossible, but the patient remains under the menace of rupture of the heart or other complications of the infarction. The treatment is merely symptomatic; resistance to all medication is characteristic of the condition.

Revue Neurologique, Paris

33: 721-1278 (June) 1926

*Methods of Exploration of the Sympathetic. G. Söderbergh.—p. 721.
*Idem. André-Thomas.—p. 767.

Methods of Exploration of the Sympathetic System.—This issue contains Söderbergh's and André-Thomas' addresses delivered at the Seventh Annual International Convention of Neurologists in Paris, June 1 and 2 of this year. "The Methods of Clinical Exploration of the Sympathetic System; Their Value" was the subject of both speakers.

Schweizerische medizinische Wochenschrift, Basel

56: 657-680 (July 10) 1926

Mutation Theory. Naegeli.—p. 657.
Epigenesis of Blood. M. Hausmann.—p. 658.
*Gastric Ulcer. M. Askanazy.—p. 661.
Perforated Ulcers. W. Odermatt.—p. 665.
*Idiosyncrasy Against Egg. W. Jadassohn.—p. 667.
Radioimmunization. A. Rosselet.—p. 670.

Gastric Ulcer.—Askanazy describes proliferations of nerves and nerve cells in gastric ulcers. He also reports a case of ulcer of the stomach penetrating into the pericardium and heart. The changes in the nerves seemed to play a rôle in the chronicity of these cases also.

Idiosyncrasy Against Egg.—Jadassohn studied a case of idiosyncrasy to eggs. The antigen was dialyzable and insoluble in ether—therefore probably neither a protein nor a lipoid. Local allergy could be transmitted to other persons by intracutaneous injections of the patient's serum (Prausnitz-Küster method). Such persons reacted with hives when injected with the antigen twenty-four hours later in the same spot. Besides this, he observed local urticaria in these places when he injected the antigen at other places ("provocation from a distance").

Archivio Italiano di Chirurgia, Bologna

16: 1-132 (July) 1926

*Primary Sarcoma of the Uterine Cervix. E. Momigliano.—p. 1.
*Therapeutic Compression of Subclavian Vessels. G. B. Macaggi.—p. 71.
*Actinomycosis of the Breast. A. Zaffagnini and M. Gamberini.—p. 81.
Vascularization of Autoplastic Bone Implants. G. Bertini.—p. 105.
Adenoma of Inguinal Region of Wolffian Origin. G. Sacerdote.—p. 122.

Primary Sarcoma of the Uterine Cervix.—Momigliano's illustrations show that the disease in his case was an adenomyometritis of sarcomatous nature in the cervical canal. He reviews the literature on the subject (274 titles), and discusses the significance of the giant cells in such cases.

Compression of the Subclavian Artery.—Macaggi recalls that hemorrhage from the subclavian artery may be rapidly fatal. He gives an illustration of a method for arresting it which he has found simple and dependable. The compression can be kept up indefinitely. The patient lies horizontally on a pillow which allows the head and trunk to slope away from the injured side. Traction is applied to the arm which lies slanting away from the trunk, sloping slightly downward. This gradual traction on the arm, with countertraction from the weight of the trunk and the hands of an assistant at the neck, or the operator pushing with his other hand, soon arrests the radial pulse, without violence, and the provisional hemostasis thus realized can be kept up indefinitely. An extension apparatus can be devised as for a fracture, if desired. The artery and vein are squeezed between the clavicle and the first rib, the shoulder the lever. To aid in development of collateral circulation, the compression may be intermittent.

Primary Actinomycosis of the Breast.—Zaffagnini and Gamberini warn that the diagnosis is often difficult at first, and even when the ulcerative stage has been reached there is nothing characteristic to exclude other mammary affections.

Pediatria Archivio, Naples

2: 1-86, 1926

Spina Bifida. A. Merlini.—p. 1.
*Surface Tension of the Cerebrospinal Fluid. M. Giuffrè.—p. 31.
Blood Sugar in Young Children. M. Solito.—p. 38.
Isolated Vitamins. F. Cascella.—p. 49.

Surface Tension of the Cerebrospinal Fluid.—Giuffrè measured the surface tension of the cerebrospinal fluid. It is slightly lower than that of water in subjects with healthy meninges, as well as in poliomyelitis and encephalitis. It decreases in tuberculous meningitis and is especially low in purulent meningitis.

Pediatria, Naples

34: 689-752 (July 1) 1926

Acute Poliomyelitis. M. Giuffrè.—p. 689.
Syphilis and Age. A. Bocchini.—p. 705.
Measles Without Eruption. S. Cannata.—p. 720.
*Primary Diphtheria of the Vulva. A. Versari.—p. 723.
*Syphilis in Twins. G. Castorina.—p. 731.

Primary Diphtheria of the Vulva.—Versari observed a case of primary diphtheria of the vulva in a girl, 2 years of age. Serotherapy, instituted before the culture confirmed the preliminary diagnosis from a slide, proved beneficial.

Syphilis in Twins.—Castorina was unable to find any evidence of syphilis in the male child, while the twin sister had a positive Wassermann reaction, enlargement of the liver and spleen, and the Mongolian habitus.

Policlinico, Rome

33: 933-966 (July 5) 1926

Serodiagnosis of Syphilis. O. Sciarra.—p. 933.
Precesarean Hysterectomy. L. Pansini.—p. 934.
Cystic Mesenteric Tumors. P. Polcenigo.—p. 937.
Pneumothorax and Work. E. Curti.—p. 939.
Surgery of Common Bile Duct. G. Caponetto.—p. 942.

33: 969-1002 (July 12) 1926

Fracture of Tibia. B. Masci.—p. 969.
Complicated Fractures. P. Para.—p. 972.
*Tuberculous Hemoptysis. G. Luzzatto-Fegiz.—p. 974.

Tuberculous Hemoptysis.—Luzzatto-Fegiz distinguishes between the real and the imaginary dangers in hemoptysis. The great danger consists in aspiration bronchopneumonia. The probability of suffocation or fatal loss of blood is very small, and these patients would not respond to any treatment. He is not afraid to have the patient expectorate all the blood he can. The patient should be in a half-sitting position and if the site of the hemorrhage is suspected, the patient should avoid the position on the supposedly healthy side. Gelatin, laxatives, camphor, calcium and preparations made from blood platelets are helpful.

Riforma Medica, Naples

42: 577-600 (June 21) 1926

Case of Pyonephrosis from Calcified Cystic Dilatation and Calculi. G. Arena.—p. 577.
Basal Metabolism and Potential Energy of the Food in the Tuberculous. G. Margreth.—p. 582.
*Typhoid in the Vaccinated. R. Lovaglio.—p. 585.
*Fango in Treatment of Osteitis Deformans. E. Di Tommasi.—p. 594.
*Foreign Body in the Bladder. L. Di Natale.—p. 597.

Typhoid After Vaccination.—Lovaglio noted an irregular and atypical form of the fever in soldiers who had been vaccinated against typhoid about a year before. The course of the disease was shorter and high fever was rare, but enlargement of the spleen was constant, and intestinal hemorrhage was frequent, as also dicrotism.

Treatment of Osteitis Deformans.—Di Tommasi reports with illustrations a case of Paget's disease of the bones in a man, aged 67, in which great improvement was realized with a course of treatment with mineral mud. He says that the benefit from the fango—which is such a valuable treatment for gout—suggests that the osteitis deformans may be of a similar nature to gout.

Table Knife in the Bladder.—The bone handle with fragment of blade measured 10 cm., and was removed from the young woman's bladder by a high incision. The case teaches that it is better to proceed almost at once to a suprapubic incision instead of wasting time and doing more damage by attempts to extract the foreign body through the urethra.

Revista Médica Latino-Americana, Buenos Aires

11: 1279-1495 (May) 1926

*Liver Function Test. R. A. Bullrich and A. Paolucci.—p. 1279.
*Surgical Treatment of Rhinophyma. Fidanza and Ruiz.—p. 1285.
Fracture of the Acetabulum. C. Lugones.—p. 1314.
Basal Metabolism. G. Bosco.—p. 1325.
Endocarditis Lenta. M. J. Barilari.—p. 1362.
Torsion Spasm. A. S. Marotta.—p. 1369.
Transient Nodal Rhythm. L. de Marval and D. Vivoli.—p. 1404.
Catheterization of the Bladder and Its Mishaps. J. J. Gazzolo.—p. 1419.
Clinical Importance of Uricacidemia. Saenz and Haendel.—p. 1435.

Test for Insufficiency of the Liver.—Bullrich and Paolucci have applied the Geraghty and Rowntree kidney test to detect hepatic incompetency, and they extol the simplicity of the technic and the reliability of the results. After injection of the phenolsulphonphthalein by the vein, the healthy kidneys eliminate up to 70 per cent in two hours. This demonstrates that the kidneys are healthy but, they assert, it shows more than this: It demonstrates that the liver is healthy also. When the liver is not functioning properly, it allows the dye to pass on, and consequently more than 70 per cent is eliminated. In fourteen cases of various forms of liver disease, the proportion eliminated totaled up to 98 per cent in some, while in typhoid and other patients the elimination was within normal range or below.

Correction of Rhinophyma.—The extreme disfigurement in the three cases described with illustrations by Fidanza and Ruiz was effectively corrected by removal of the superfluous tissue and "modeling abrasion." There was no need for plastic reconstruction, the parts healing in normal shape and outline.

Semana Médica, Buenos Aires

1: 1241-1308 (June 10) 1926

*Bandl's Ring Impeding Version. Ubaldo Fernández.—p. 1241.
Surgical Treatment of Trophic Edema. Sussini and Casaubon.—p. 1246.
*Spinal Anesthesia in Gynecologic Surgery. A. Bello.—p. 1255.
Argentine Works on Dermatology and Syphilis in 1925. A. A. Fernández.—p. 1256.
Pneumoperitoneum in Treatment of Peritoneal Tuberculosis. O. P. Curti.—p. 1263.
Hematocolpos from Imperforate Hymen. A. J. Lasala.—p. 1264.
*Local Eosinophilia in Cancer. Pavlovsky and Widakowich.—p. 1265.
Simplified Technic for Persufflation of Fallopian Tubes. A. Rubinstein.—p. 1278.
Significance and Importance of Orthopedics. J. Valls.—p. 1280.
The Kielland Forceps. R. Schwarcz.—p. 1281.
Ether by the Rectum in Whooping Cough. H. Magliano.—p. 1299.

Obstetric Version with Contraction of Bandl's Ring.—Ubaldo Fernández gives illustrations of his method of overcoming the difficulties for internal podalic version. The body of the fetus is twisted around in the axis of the uterus by rotating the protruding limb, aided by pressure from without. The contracting tissues do not form a perfect ring; one side is more contracted than the other, and rotating the body draws the neck out of the grasp of the ring on that side. This brings another part of the body against the ring, and version can then proceed as usual. This maneuver proved successful in the seven cases in which it has been applied, including two of breech presentation.

Spinal Anesthesia.—Bello expatiates on the superior advantages of spinal anesthesia for gynecologic operations. He emphasizes the importance of sterilization of a broad field with iodine, and the horizontal position of the patient, reclining on her side, the spine curved to the utmost. He tells her to bring her chin as close to her knees as possible. Local anesthesia down to the periosteum is indispensable. The intraspinal injection of 0.08 Gm. of stovain and 0.02 Gm. of cocaine—mixed with spinal fluid drawn into the syringe—usually anesthetizes for two hours.

Local Eosinophilia in Cancers.—Pavlovsky and Widakowich give a colored plate showing the remarkable disintegrating action displayed by the eosinophils in cancers. They seem to have a protective action against cancer invasion like that of the phagocytes against invasion of bacteria. It is evident even in the lymph nodes invaded by cancer cells. In malignant disease with much of this local eosinophilia, the course is exceptionally favorable. They urge the necessity for stimulating the defensive forces in combating malignant disease, and that a special effort should be made to promote production of eosinophils.

Archiv für Gynäkologie, Berlin

129: 1-226 (June 19) 1926

*Can a Woman Have Hemophilia? K. H. Bauer and E. Wehefritz.—p. 1.
*Obstetric Twilight Sleep (Hypnosis). G. von Wolff.—p. 23.
*Metabolism in the Pregnant. E. Klaften.—p. 66.
*Tardy Puerperal Hemorrhage. O. Frankl.—p. 87.
Adenomyosis Involving Uterus and Tubes. J. Schiffmann.—p. 97.
*Comparison of Blood of Mother and Infant. K. v. Oettingen.—p. 115.
Birth Mechanism in Contracted Pelvis. P. Schumacher.—p. 146.
*"Roentgen Children." P. Werner.—p. 157.
*Protein Therapy in Acute Inflammation. W. Butomo.—p. 171.
*Coxitic Intrapelvic Protrusion. R. Benda.—p. 186.
Double Female Genital Organs. A. Ecke.—p. 204.

Does Hemophilia Occur in Women?—Bauer and Wehefritz reiterate that there is no evidence to show that true hemophilia is ever observed in women. In a new family tree they describe, in each of four generations from one to six of the men were bleeders and none of the women, and only five of the men escaped. To date we must accept hemophilia as a sex-bound recessive factor.

Obstetric Twilight Sleep in Hypnosis.—Wolff describes his technic and says that it proved successful in numerous cases at the Berlin maternity, but mainly in the mentally sound women. The nervous were less susceptible to it, and the method requires expenditure of much time and much nervous energy on the part of the obstetrician. A bibliography of 116 references is appended.

Internal Secretion, Basal Metabolism and Transformation of Protein in the Pregnant.—Klaften has been experimenting for two years with extracts of various organs administered to pregnant women. Among the facts apparently established by his research are that the placental extract stimulates metabolism, and that thyroid extract increases the basal metabolism much more than in the nonpregnant. It may give great service in the depression of protein metabolism which seems to be an important element in the eclampsia picture. His research has thus supplied a basis for thyroid treatment of impending eclampsia. Ovarian extracts had the least influence of all on the basal metabolism. In ten women after panhysterectomy or roentgen-ray castration, the basal metabolism was 20 to 40 per cent below normal, but not with pituitary amenorrhea.

Tardy Puerperal Hemorrhage.—Frankl analyzes 460 cases of hemorrhage after abortion or childbirth. The curet scrapings, the uterus walls after hysterectomy and other evidence testify that defective involution of the decidua and of the vessels is a common cause for tardy hemorrhage. We do not have to assume retention of scraps in every case.

Comparison of Maternal and Fetal Blood.—Oettingen's tables show a much higher content of amino-acids, calcium and phosphorus in the blood of the new-born. It shows further a high stability in regard to the sedimentation and other tests. The maternal blood responds readily and intensely to tests which meet with only a sluggish, if any, response in the young infant's blood, even when conditions are varied by heating, etc. He urges further research in this line on a more extensive scale, and especially to determine whether the accumulation of calcium, phosphorus and amino-acids in the blood of the new-born may not be due to an elective secretion of the building stones required by the infant organism.

Roentgen-Ray Children.—Werner reports forty-five pregnancies in twenty-two women whose ovaries had been previously exposed to the roentgen rays. Of the twenty-seven viable children born, 19 per cent died in early infancy. Four of the surviving twenty-two children had congenital malformation of the heart or trachea, and five others minor anomalies, while several of the others are not normally healthy children. In three other cases the pregnancy was under way at the time of the exposures, and one of the children is an idiot; the two others seem to be normal. Zappert has collected twenty-one such instances, including a personal case. Only ten of the children showed no physical anomalies. Six others presented microcephalus, idiocy or mongolism.

Action of Parenteral Injection of Milk on Acute Inflammation.—Study of thirty-five gynecologic patients and experimental research has confirmed that intramuscular injection of milk induces a decided reaction in the bone marrow. The leukocytes increase in numbers and take a more active part in acute suppurative processes.

Inward Protrusion of the Acetabulum.—Benda gives an illustrated description of another case in which the acetabulum, under the influence of inflammatory changes, had grown inward, partly filling that side of the pelvis, and compelling cesarean section. In the fourteen cases of protrusion into the pelvis, only four were in males. In another case, a meningococcus coxitis had induced conditions that would certainly have entailed the protrusion if the girl had not died before it had a chance to develop.

Deutsche medizinische Wochenschrift, Berlin

52: 1113-1154 (July 2) 1926

Eugenics. E. Meyer.—p. 1113.
Fractures of Neck of Femur. E. Lexer.—p. 1115.
*Liver Function and Treatment. S. Isaac.—p. 1116.
Insulin in Liver Diseases. G. Hetényi.—p. 1119.
*Blood Transfusion in Ulcers. A. Plehn.—p. 1120.
Gastroscopy. A. Hübner.—p. 1123.
*Permeability of Meninges. R. Bieling and R. Weichbrodt.—p. 1125.
*Serum Plus Metal Salts. L. E. Walbum.—p. 1126.
Polycythemia from Irradiation. F. Krömeke.—p. 1127.
Postpartum Period. M. Traugott.—p. 1127.
Care of the Breasts. H. Klose.—p. 1132.
Protracted Tubal Abortions. Rissmann.—p. 1135.
Technical Novelties. M. Schütz.—p. 1137.

Liver Function and Treatment.—Isaac advises to use in the diet of patients with jaundice only such proteins as are retained long in the stomach, and therefore better hydrolyzed before they are resorbed. Carbohydrates are most suitable for these patients. The Meltzer-Lyon duodenal injection of magnesium sulphate helps to clear the jaundice. Insulin has given some good results, although the action is not explained. He agrees with Fischler on the importance of the urobilin test of the urine for detection of slight lesions of the liver. The test is just as important as the test for albumin in kidney disease.

Blood Transfusions in Peptic Ulcers.—Plehn uses 600-1000 cc. of defibrinated blood for transfusions in patients with hemorrhages from gastric or duodenal ulcer. The bleeding stops promptly. Besides this, he observed in nine out of eleven such patients a complete clinical recovery. The improvement of the subjective disturbances in ulcer patients is so regular that a failure would speak for the presence of cancer.

Permeability of Meninges.—Bieling and Weichbrodt show that Walter's method for determination of bromides in blood and cerebrospinal fluid with gold chloride is erroneous. They had better results with Hauptmann's modification (precipitation of proteins with trichloracetic acid).

Serum plus Metal Salts.—Walbum was able to cure mice injected with tetanus or dysentery toxin by combined injections of the antiserum with definite amounts (0.4 cc. of a 0.001 to 0.0006 molar solution) of a manganese salt.

Deutsche Zeitschrift für Chirurgie, Leipzig

196: 1-240 (May) 1926

Late Posttraumatic Apoplexy. A. Winkelbauer.—p. 1.
Retroperitoneal Causes of Intestinal Paralysis. R. Demel.—p. 28.
*The Pyloric and Duodenal Junction. F. Spath.—p. 39.
*Gastric Acidity and Pepsin Values. V. Orator and Knittel.—p. 70.
Serology of Peptic Ulcer. Orator and Kordon.—p. 84.
Injury to the Heart from General Anesthetics. F. Kazda.—p. 100.
Laws of Inflammatory Joint Contractions. F. Friedländer.—p. 121.
Surgical Treatment of Flatfoot. K. v. Dittrich.—p. 194.
A Case of Plastic Repair of Both Lips. R. Demel.—p. 210.
A Case of Aneurysm. H. Haberer.—p. 215.
Mediastinal Tumor or Aortic Aneurysm. O. Hoche.—p. 219.
Cutaneous Emphysema After Esophagoscopy. J. Zipper.—p. 223.
Stenosis After Transverse Resection of Stomach. Walzel.—p. 228.
Occult Postoperative Duodenal Fistula. A. Winkelbauer.—p. 232.

Pyloric Glands in the Duodenum.—Of forty-eight specimens of duodenal lining, Spath found gastric mucosa, containing pyloric glands, in one. He believes that this strengthens the theory that heterotopic pyloric glands in the duodenum may be responsible for peptic jejunal ulcers after Billroth II by inducing the second (chemical) phase of hydrochloric acid secretion.

Acidity and Pepsin Values in Gastric and Biliary Diseases.—In an examination of eighty cases, Orator and Knittel found high pepsin values in cholelithiasis as well as in ulcer cases with functional gastric disturbances or after gastroenterostomy.

Klinishe Wochenschrift, Berlin

5: 1209-1256 (July 2) 1926

*Pneumoconiosis. A. Böhme.—p. 1209.
*Dilatation of the Heart. A. Loewy and A. E. Mayer.—p. 1213.
*Metabolism of Cancer. P. Rona and W. Deutsch.—p. 1216.
*Idem. O. Stahl and O. Warburg.—p. 1218.
*Ovary Hormone. B. Zondek.—p. 1218.
*Fractures of the Skull. W. Lange.—p. 1225.
*Blood Output and Oxygen. F. Kisch.—p. 1227.
*Nitrate Diuresis. E. Becher and G. May.—p. 1229.
Heart Block and Fibriliation. E. Block.—p. 1230.
Dick Test and Scarlet Fever Prevention. B. Vas.—p. 1232.
Paralysis Encephalitis. H. Hoff and E. Pollak.—p. 1235.
Cerebrospinal Fluid in Rabbits. F. Plaut.—p. 1235.
*Heart Beat and Liver. L. Asher.—p. 1236.
*Insulin and Carbohydrates. A. Lublin.—p. 1236.
Thyroid Treatment of Obesity. C. von Noorden.—p. 1238.
Endocarditis Problems in America. H. Cohn.—p. 1240.
Camphor. Bijlsma.—p. 1254.
A Hand Reflex. Kempner.—p. 1255.

Pneumonoconiosis.—Böhme reviews the symptoms of pneumonoconiosis and its alarming frequency in miners since the drills driven by compressed air came into use. Quartz dust is much more injurious than coal. There can be no doubt that pneumonoconiosis predisposes to pulmonary tuberculosis, although the latter also might accelerate the development of the former. Individual prevention has failed, but rapid removal of the dust by sprinkling and ventilation has greatly reduced the morbidity.

Dilatation of the Heart.—Loewy and Mayer made experiments on themselves and others. Inhalation of nitrogen for two to three minutes caused an acute dilatation of the heart in most of them. It was localized as a rule in the region of the pulmonary artery, but the ventricles also dilated in some experiments. The dilatation increased sometimes further after inhalation of air was resumed. It shows that the heart muscle is quite sensitive even to a short and only relative lack of oxygen. The dilatation is transitory.

Metabolism of Human Cancer.—Since the validity of Warburg's discoveries on the metabolism of cancer cells had been denied for human cancer by Bauer and Nyiri, the editor of the *Klinische Wochenschrift* asked Rona and Deutsch to repeat the experiments. They confirm fully Warburg's results. The relative amount of cancer cells in the sections seems to account for some divergent observations.

Lactic Acid Fermentation in a Carcinoma of Human Bladder.—The fermentative action of human cancers had been determined so far only by Warburg's manometric method, but not chemically. Stahl and Warburg determined both in a tumor consisting practically only of cancer cells. The manometric method indicated a lactic acid production amounting to 9.9 per cent of the weight of the tissue per hour; direct chemical determination showed 10 per cent, which is almost the same quantity as produced by malignant tumors of animals.

Ovary Hormone.—Zondek describes his method of preparation of the ovarian hormone, and accepts Klein's name "folliculin" for it. A cow's follicle contains on the average one mouse unit per cubic centimeter. The total hormone content of a woman's ripe follicle is about 3-5 units. He is opposed to Loewe's opinion on the dosage according to body weight. If this principle were applied to hormones, the dose of pituitary extract in women would have to be 600 times larger than it is actually. He believes that the dose should correspond to the physiologic content of a human follicle. He reports a few good results in amenorrhea (one in an ovariectomized woman), and also the effect on the secondary sex characters. He warns against overestimating the possibilities of this treatment, and reports two cases in which he was unable to induce menstruation.

Fractures of the Skull.—Lange pleads for conservative treatment of not infected and not inflamed fractures of the base of the skull. The only exception should be made if a fracture of the mastoid makes an inspection of the drumhead impossible. Inflamed fractures should be treated like any other inflammation of the middle ear. An extensive chiseling is not always necessary.

Blood Output and Oxygen.—Kisch observed a considerable hypoxemia (30.5 per cent) in the arterial blood of dogs when increasing the frequency and decreasing the volume of respiration. The oxygen supply to the tissues becomes insufficient, and is not fully compensated in spite of the increased blood pressure and blood output from the heart. Addition of 16 per cent of carbon dioxide to the air also entails a lowering of the oxygen consumption. This is due to the impaired dissociation of the oxygen, and causes a similar increase in blood pressure and heart output, as the anoxemia in the former case.

Nitrate Diuresis.—Becher and May confirm the increased elimination of sodium chloride during a diuresis provoked by injection of sodium nitrate. The chlorine and urea concentrations of the urine approach that of the serum. The chlorine concentration of the latter sinks during the diuresis. It remains unchanged in a nephrectomized animal. The main action of sodium nitrate is on the kidney.

Heart Beat and Liver.—Asher continued his investigations on the enhancing influence of liver extracts on the heart beat. They may reverse the action of small doses of atropine.

Insulin and Carbohydrates.—Lublin found in healthy subjects an increase of the respiratory quotient above 1, after administration of small amounts (30 Gm.) of levulose and injection of insulin. This speaks for a synthesis of fat, while it seemed that epinephrine and pituitary extracts act as antagonists of deposition of fat.

Medizinische Klinik, Berlin

22: 1061-1096 (July 9) 1926

Tuberculosis Problems. R. Schmidt.—p. 1061.
Angina Pectoris. H. Kohn.—p. 1063. C'cn.
Morphinism. B. Hahn.—p. 1068.
Torsion of Cecal Cyst. Flick.—p. 1071.
Rhabdomyoma of Tongue. A. Rütz.—p. 1072.
Stimulation Treatment. Walcha.—p. 1072.
Cholecystography. S. Weiss.—p. 1073.
*Serum Sickness. F. Spehlmann.—p. 1074.
Epinephrine Injections. M. Lévai.—p. 1075. C'td.
Contusion of Chest and Cancer of Larynx. P. Frank.—p. 1080.
Cancer and Its Treatment. O. Strauss.—p. 1083. C'td.

Serum Sickness.—Spehlmann observed a grave serum sickness in himself and in a nurse after preventive injection of 2.9 cc. of diphtheria antiserum. He had received a similar injection twenty-three years before, the nurse fourteen years before. His wife, who was injected for the first time, remained free from symptoms.

Monatsschrift für Geb. und Gynäkologie, Berlin

73: 253-386 (June) 1926

*Innervation of the Uterus. M. Gerstmann.—p. 253.
Werboff's Theory of Normal Labor. N. Tschistiakoff.—p. 258.
Milk Injections in Gynecologic Inflammations. W. Butomo.—p. 273.
Choice of Operations for Retroflexed Uterus. W. Feldmann.—p. 289.
*Bilirubinemia of Pregnancy. Mandelstamm and Nogeikoff.—p. 297.
Peritonitis and Extra-Uterine Pregnancy. G. H. Schneider.—p. 304.
Case of Sarcoma of the Vagina. Z. v. Szathmáry.—p. 312.
Pendulous Breast and Pendulous Abdomen. H. Küster.—p. 316.
History of the Surgeon's Glove. E. Ebstein.—p. 341.

Innervation of the Uterus.—Degeneration of the lowest sacral segments of the cord, from trauma, was evidenced in Gerstmann's case by complete anesthesia and analgesia from the second or third sacral segment down, with incontinence of bladder and rectum. Nevertheless, the patient, becoming pregnant, felt the child's movements, and the pain of normal delivery was undiminished. From a comparison of this with published cases, he concludes that labor is independent of the connection of the motor nerve paths with the spinal cord, that the centers lie in Frankenhäuser's ganglion, the nerve cell groups of which have a large measure of independence. The sensory paths for the perception of the fetal movements enter the cord between the middle thoracic and lower lumbar and those for the labor pains between the fifth lumbar and second sacral segments.

Increase of Bilirubin in the Blood as a Sign of Pregnancy.—Using Vogl and Zins' oxidation test, Mandelstamm and Nogeikoff found increase of bilirubin in the citrated plasma in 80 per cent of sixty-two normal pregnant women in the second to the tenth month. For the first three months the percentage was 84. In pernicious vomiting of pregnancy, tubal abortion and recent uterine abortion, the test was positive. In ten healthy, non-pregnant women, it was negative. Seven non-pregnant women, suspected of pregnancy, reacted negatively, except one. In twenty-five inflammatory gynecologic processes, 12 per cent gave a weakly positive reaction.

Münchener medizinische Wochenschrift, Munich

73: 1101-1142 (July 2) 1926

Medical Philosophy. A. Bier.—p. 1101. C'td.
*Sex Determination. W. Goetsch.—p. 1103.
Heredity and Psychoses. H. Hoffmann.—p. 1104.
*Sulphate Waters and the Liver. Arnoldi and Roubitscheck.—p. 1106.
Internal Treatment of Gastric Ulcer. A. Schüle.—p. 1107.
Fate of Sodium Phenoltetraiodophthalein. K. Hoesch.—p. 1109.
Examination of Urine. A. Tilger.—p. 1111.
Acute Methemoglobinemia from Gas Bacillus Sepsis. Eichler.—p. 1111.
Forensic Obstetrics. M. Hofmeier.—p. 1113.
Feer's Disease. A. Bratusch-Marrain.—p. 1114.
Improved Roentgenoscopy. Pleikart Stumpf.—p. 1114.
Extension Apparatus for the Lower Extremity. A. Braun.—p. 1115.
Medical German. F. Schultze.—p. 1118.
Medical Ethics. Burkard.—p. 1118.

Sex Determination.—Certain fresh-water polyps, such as *Hydra attenuata*, form, under normal circumstances, buds which develop into animals of the same sex as the parent. Goetsch cut these hydrozoa into pieces which he strung closely together on a hair. Such parts grow together. When using pieces from animals of different sexes, he obtained hermaphrodites only rarely and only as a transient condition. The other hydras adopted one sex, even when they had been united only for a day or two and separated again. When the hydras are cut at the time of ripening of the sex products, the subsequent regeneration uses up the sex gland. Some of these animals changed their sex—apparently because the other potential sex gland had gained the predominance during the resorption of the hypertrophic gland. He concludes from this and other observations that the definite sex depends only on the inhibition of the other potential sex. Small causes, which are being gradually discovered and brought under control, determine the differentiation of sex.

Action of Sodium Sulphate Waters in Liver Disease.—Arnoldi and Roubitscheck conclude that Carlsbad water (1 teaspoonful of the salt in 150 cc. of water) promotes the change of the bound (indirect) bilirubin into the direct, which can be eliminated easily. The bilirubin concentration of the blood sinks rapidly. They also point to the slight alkalosis and restoration of the acid-alkali balance after repeated intake of the water.

Wiener klinische Wochenschrift, Vienna

39: 773-804 (July 1) 1926

*Active Substances of Leukocytes. A. Neumann.—p. 773.
*Heart Fibrillation and Electric Current. L. Haberlandt.—p. 774.
Sedimentation Test in Tuberculosis. Mayrhofer.—p. 776. C'td.
Thyroid Preparations. E. Lenk and P. Liebesny.—p. 782.
Lipoids as Antigens. F. Ornstein.—p. 785.
*Occult Bleeding. K. Usami.—p. 786.
Influenza Epidemic. A. Rosenblüth.—p. 789.
Atherosclerosis of Kidneys. V. Kollert.—p. 790.
Treatment of Fractures. L. Böhler.—p. 791.
Reform of Curriculum. H. H. Meyer.—p. 792.
Diabetic Coma. H. Elias. Supplement.—pp. 1-12.

Active Substances of Leukocytes.—Neumann obtained from the bone marrow of various animals, especially horses, a substance containing usually eosinophilic granules. Injections of small amounts of this substance induced a prolonged leukocytosis. The extract acts as antagonist of pilocarpine. He also made some experiments on mice, and believes that the large amounts of his extract improve the resistance of the animal to larger doses of some germs, but decrease it, when the dose of the bacilli is smaller.

Heart Fibrillation and Electric Current.—Prévost and Batelli discovered in 1899 the possibility of restoration of normal heart beat by high tension currents in animals in which they had induced ventricular fibrillation by irritation with faradic currents. Jellinek confirmed this and suggested to try in desperate cases of electric injury a very short application of the same current that had caused the apparent death. Haberlandt agrees with him, and would extend the indication as the very last therapeutic resort in the ventricular fibrillation due to other acute injuries (chloroform, *great pain or fright*). The ventricular fibrillation is best diagnosed by electrocardiography. Another symptom is a soft continuous murmur over the heart region, with absence of normal heart sounds.

Occult Bleeding.—Usami describes the details of his technic of examination of stool for occult bleeding by means of leukobases, especially those of fuchsin and methyl violet. One of the precautions necessary to prevent spontaneous oxidation is addition of hydrogen peroxide after the extract from the feces has been mixed with the reagent. Addition of a drop of pyridine accelerates the reaction.

Zeitschrift für die ges. exp. Medizin, Berlin

50: 625-797 (June 10) 1926. Partial Index

Excretion of Iron in the Bile. T. Brugsch and J. Irger.—p. 625.
*Epinephrine Glycemia and Respiratory Metabolism. Erichson.—p. 637.
Excretion of Uric Acid. M. Kalf-Kalif.—p. 672.
Pathologic Decomposition of Protein. M. Schierge.—p. 680.
*Water Metabolism. R. Meyer-Bisch and W. Wohlenberg.—p. 728.
Sensitiveness of Human Organism to Pituitary Extract. K. Csépai and S. Weiss.—p. 745.
Influence of Insulin on Surviving Liver. V. Laufberger.—p. 754.
*Low Temperature in Insulin Poisoning. V. Laufberger.—p. 761.
Phosphorus Metabolism in Nephritis. H. Heinelt.—p. 766.
Action of Digestive Ferments on Insulin. Weiss and Pogány.—p. 786.

Epinephrine Glycemia and Respiratory Metabolism.—Erichson studied epinephrine glycemia in four healthy men. The nourishment of the experimental subjects consisted for several days chiefly of proteins and very small quantities of fats and carbohydrates. After twelve hours of fasting, 0.8 mg. of epinephrine was injected subcutaneously. During a period of more than four hours a series of blood and gas analyses was made, to follow the influence of the epinephrine. It was shown that the metabolic influence of epinephrine is marked by an increase of oxygen consumption and increase of blood sugar. As Bornstein and his pupils have found, there is no parallelism between the increase of blood sugar due to epinephrine and the respiratory quotient as an expression of increased combustion of carbohydrates. The urine acidity did not show any relationship to the combustion of epinephrine sugar, contrary to the opinion of Endres and Lucke. The author holds the opinion that there is no increase in the combustion of carbohydrates *in epinephrine glycemia*, as there is *in the alimentary*. A similarity between glucose and epinephrine glycemia exists only during the first hour, before the alimentary glycemia from dextrose has entailed increased combustion of carbohydrates.

Water Metabolism.—Meyer-Bisch and Wohlenberg administered common salt to nine healthy subjects, and the composition of blood, the body weight and the salt balance were recorded. This was followed by salt administration combined with sugar (peroral). In seven of the nine experiments the combination of sugar and salt effected a stronger and more prolonged dilution of the blood. In four cases there was an increase of water in the organism for several days. Eight experimental subjects excreted the salt incompletely and more slowly than with the salt alone. In three cases the sugar produced an absolute hypochloruria. The inhibiting influence of sugar administration cannot be explained on a basis of renal insufficiency, because glycosuria was never observed; it depends on changes in the tissues. To study the influence of the suprarenals on salt and water metabolism in diabetes, they injected epinephrine in combination with administration of salt. Two experiments on normal individuals showed a decrease of the salt excretion similar to that from administration of sugar. They conclude that there may be an antagonism between the suprarenals and the pancreas in the regulation of metabolism of salt.

Action of Low Temperature in Insulin Poisoning.—In nine tables Laufberger records fifty determinations of the respiratory quotient in normal rabbits and in rabbits poisoned with insulin. The temperature in the respiratory chamber was decreased from 29 to 10 C. and changes in respiration and body temperature were manifest. It was shown that normal rabbits increased their production of heat, the respiratory *quotient was slightly increased, and the body* temperature remained normal. Animals poisoned with insulin increased their production of heat slightly, the respiratory quotient was much increased and the body temperature remained sub*normal*. They were, *in other words*, unable to increase the production of heat to obtain the normal temperature, owing to lack of carbohydrates. It proved impossible to force dogs poisoned with insulin to perform severe muscular work.

Zeitschrift für Kinderheilkunde, Berlin

41: 413-554 (July 15) 1926

Pneumonia in Infants. E. Nassau.—p. 413.
*Glycolysis in Rickets. E. Freudenberg and A. Welcker.—p. 466.
*Anemia in Children. B. de Rudder and F. Wesener.—p. 479.
Pospischill's Aphthoid. A. Fessler and F. Feyrter.—p. 489.
*Electrolytes, Muscles and Tetany. H. Behrendt.—p. 499.
Diabetes in Infants. H. J. Arndt and A. Welcker.—p. 518.
Salivary Urea. C. Falkenheim.—p. 530.
Still's Disease and Scleroderma. W. Stoye.—p. 538.
*Dissociation of Toxin-Antitoxin. M. Schonberger.—p. 546.
Premature Puberty. S. Gross.—p. 552.

Glycolysis in Rickets.—Freudenberg and Welcker observed an inhibition of glycolysis in the incubated blood from children with grave rickets. Irradiation of the children was followed by a restoration of the faculty. Tetany does not lower the glycolysis. The slower metabolism in rickets (Freudenberg-György) is characterized by hypophosphatemia, inhibition of glycolysis and lower lactic acid content of the blood. Hexose phosphate is decomposed by the blood in rickets, but lactic acid seems to be resynthetized to dextrose, which may account for the apparent inhibition of glycolysis.

Anemia in Children.—Rudder and Wesener observed a grave anemia in three infants born from the same parents. The first two died. The clinical symptoms were those of a *familial* hemolytic jaundice. The anatomic changes resembled those of pseudoleukemic anemia.

Electrolytes, Muscles and Tetany.—Behrendt observed a progressively increasing potassium content of the muscles in parathyroprival dogs. The lactacidogen content of muscles is not lowered during the spasms. This differentiates them from voluntary contractions and convulsions of cerebral origin. The calcium content does not change. The potassium concentration of the serum increases in guanidine poisoning, the ionized calcium decreases. The calcium content of the muscles decreases, potassium remains *the* same. This *would speak against an identity* of parathyroprival tetany and guanidine poisoning.

Dissociation of Toxin-Antitoxin.—Schönberger investigated the problem of dissociation of diphtheria toxin-antitoxin mixtures. She *found no indication of splitting* of an overneutralized mixture after injection in children. The toxin content of the dose corresponded to 1/50 of a lethal guinea-pig dose.

Zeitschrift für klinische Medizin, Berlin

103: 361-578 (June) 1926

*Hydremia and Alkali Reserve. H. Petow and W. Siebert.—p. 361.
*Epinephrine Reaction. H. Zondek and F. Behrendt.—p. 373.
*Tissue Respiration. K. Grassheim.—p. 380.
Differential Leukocyte Counts. A. Weiss.—p. 427.
*Shifting of Neutrophiles. A. Egoroff.—p. 441.
*Biochemistry of Hookworm Anemia. S. Narita.—p. 452.

Endocrines and Arthritis. M. H. Herzberg.—p. 507.
Therapeutic Malaria. L. J. Leisermann and G. W. Rubaschkin.—p. 530.
Recurrens and Arsphenamine. J. Oettinger.—p. 546.
*Cinchophen and Gastric Secretion. K. Kindermann and M. Schechter.—p. 558.
*Low Blood Pressure. H. Curschmann.—p. 565.

Hydremia and Alkali Reserve.—Petow and Siebert point out that dilution of the blood results in a lowered combining power for carbon dioxide, and diminishes the buffer capacity of the blood. Addition of strong acids does not change the buffer capacity, and only lowers the alkali reserve. They determined both qualities by a graphic method indicating the carbon dioxide-combining power of the blood at different tensions of carbon dioxide. They had various results in nephritis. Hydremia had a remarkable influence and may be the sole cause of hypocapnia. In other cases there are, besides that, disturbances of the acid-base equilibrium. Some of them increase the hypocapnia due to hydremia. In other cases the excess of alkalies counteract it. There is hardly any eucapnia to be found in grave disturbances of the kidney.

Epinephrine Reaction.—Zondek and Behrendt changed the vagotonic as well as the sympathicotonic reaction to epinephrine toward the normal by injections of a vegetable protein, and even by intragluteal injections of olive oil. The reaction also changed in obese patients according to whether the diet caused retention of water and salt or not. They believe that the colloidal condition of tissues and capillaries determines the action of the hormone. This probably applies also to the thyroid hormone, and may be the cause of its failure to influence certain fat deposits localized in the subcutaneous tissue, rich in water.

Tissue Respiration.—Grassheim investigated the oxygen consumption of thin sections made from surviving organs of laboratory animals that had been subjected to various experiments. There was no increase of the respiration above normal in any one of the experiments, even when such an increase had certainly occurred before the animal was killed. Ether anesthesia had no influence. Contrary to this, chloroform sometimes made irreversible changes, expressed by a lower respiration of the surviving tissue and by histologic changes. Phosphorus poisoning also lowered the respiration of the tissue except where the sections were histologically intact. The most peculiar depression of oxygen intake occurred in some of the animals which had been subjected to forced feeding with protein. He believes that this was due to an indifferent behavior of the accumulated "reserve" protein in the cells.

Shifting of Neutrophils to the Right.—Egoroff designates the presence of less than 3-4 per cent of neutrophils with undivided nuclei, with simultaneous increase of the segmented neutrophils above 63 per cent, as shifting to the right. He found it in about 20 per cent of repeatedly examined healthy subjects. The shifting is relatively stable. Diseases which usually cause a shifting to the left (toward the undivided nuclei) may not produce the change. The majority of these subjects had an accelerated reaction to stimuli in psychologic tests, and the faculty of concentrating was increased.

Biochemistry of Hookworm Anemia.—Narita investigated the fragility of erythrocytes and the condition of the blood, especially its lipoid content and its lipolytic ferments, in hookworm patients as well as in experimental anemia. He was able to induce in rabbits blood changes identical with those of hookworm anemia by a water soluble colloidal hemolytic substance extracted from hookworms. The increased resistance of erythrocytes is evident before the anemia sets in. The blood lipoids are decreased in the disease.

Cinchophen and Gastric Secretion. — Kindermann and Schechter produced an increased gastric acidity by intravenous injections of a cinchophen derivative. The only exceptions were encountered in pernicious anemia and grave cachexia, exophthalmic goiter, and cancer. The injections seemed to be of therapeutic value in functional achylia and subacidity.

Low Blood Pressure.—Curschmann believes that permanent low pressure has a protecting effect on the organism. He always had the impression that a hypofunction of the thyroid defers the aging process, especially when it lowers the blood pressure.

Zeitschrift für urologische Chirurgie, Berlin

20: 1-126 (July 17) 1926

Ureterocele. J. Gottlieb.—p. 1.
Correction of Epispadial Anomaly. A. Ritter.—p. 5.
Calculus in Dilated Ureter. J. Minder.—p. 13.
*Acid-Alkali Excretion Test. G. von Pannewitz.—p. 19.
Diagnosis of Horseshoe Kidney. D. N. Eisendraht et al.—p. 27.
Congenital Enlargement of the Bladder. H. Angerer.—p. 36.
Histology of Rupture of Bladder. E. Lehmann.—p. 55.
Nonradiopaque Renal Calculi. Z. Kairis.—p. 66.
Papillomatous Tumors of Kidney Pelvis. K. Haslinger.—p. 77.
Tumor in a Kidney Capsule. K. Haslinger.—p. 89.
*Nephrotomy. Its Importance and Technic. Roseno.—p. 96. C'td.

Acid-Alkali Test of Kidney Function.—Pannewitz asserts that Rehn's acid-alkali test yields information not only in regard to the functional capacity of the kidneys, but throws light also on the physiology and pathology of the electrolyte system in general. Dilute hydrochloric acid (25 drops) is given by the mouth, and eighty minutes later 50 cc. of a 4 per cent solution of sodium bicarbonate is injected intravenously. For children, drinking a pint of milk takes the place of the intravenous injection. All disturbances in the mineral metabolism, all conditions which increase the alkali reserve (pregnancy for instance), or reduce it (liver disease), modify the urine reaction correspondingly and can be differentiated by this function test, especially when supplemented by determination of the carbon dioxide content and capacity of the blood. It is particularly useful as a gage of the effect of an acid diet in treatment of defective consolidation of fractured bones.

Nephrotomy. — Roseno declares that none of the classic technics for nephrotomy are free from danger of hemorrhage. He reports after-hemorrhage in 10 per cent of the 1,800 nephrotomies for calculi in the last twenty-five years; 5.8 per cent died in spite of secondary nephrectomy. Examination of kidneys that have been incised months or years before has shown that the incision itself causes less harm than the suture. The atrophy from pressure of the deep sutures, with new infarct formation, is responsible for the after-hemorrhage, and this injury of the parenchyma must be avoided. He proposes an ideal method for nephrotomy, to be described in the continuation of his article.

Zeitschrift für Urologie, Leipzig

20: 401-480, 1926

Autovaccine Treatment of Urinary Infections. S. Went.—p. 401.
*"Massage of the Prostate." Zollschan.—p. 416. Idem. Sprinz.—p. 420.
Nephrolithiasis in Eastern Thuringia. Nicolas.—p. 421.
Extraction of Large Calculus from Female Bladder. Egyedi.—p. 426.
"Congenital Atony of the Ureter." J. Gottlieb.—p. 429.
*Syphilis of the Prostate. T. Cohn.—p. 430.
Ureterocele in the Bladder. C. von Landwüst.—p. 439.

Massage of the Prostate.—Zollschan's experience with massage of the prostate has been decidedly favorable. The tissue enclosing the prostate is stout, and there is much less danger of perforation than in case of epididymitis. With interglandular processes the pathologic secretion may stagnate for years; apparent clinical cure may conceal lurking infection. This may flare up, simulating new infection of the urethra. Consequently, when the acute stage of the process is past, which can be determined partly by Picker's temperature control and partly by regurgitation of pus, the cavities of the gland must be evacuated. Picker's diagnostic method allows the separate foci to be discovered and eliminated. Treatment based on the pathology of the adnexa, he reiterates, gives incomparably better results than treatment addressed principally to the urethral mucosa. Sprinz, on the other hand, denounces massage of the prostate, saying that he is one of many who have witnessed epididymitis develop as a direct consequence of it. He insists that the prostate should be left in peace, and treatment focused on enhancing the patient's resisting powers.

Syphilis of the Prostate.—Cohn has encountered three cases of gummatous disease of the prostate in the last five years, and has found nineteen cases on record. From two to thirty-six years had elapsed from the infection with syphilis. All the patients complained of frequent desire to urinate and difficulty and pain in micturition. The urethra was usually apparently normal. In eight cases examined with the cystoscope, it revealed lesions in the bladder. Palpation through the rectum disclosed great variety in size and shape of the prostate, as also in consistency and sensitiveness. In all, treatment for syphilis promptly banished the symptoms, and the prostate returned to normal size and shape. The enlargement was often restricted to one side lobe. The absence of polyuria and of residual urine and the slight tenderness of the prostate are further clues to the nature of the process. In still another case, gummatous disease of the prostate was a necropsy surprise in an apparently healthy young man killed in an accident.

Zentralblatt für Chirurgie, Leipzig

53: 1553-1616 (June 19) 1926

Radical Removal of Carcinoma of Prostate. A. Läwen.—p. 1554.
Gunshot Wound of Liver and Gallbladder. P. Balkányi.—p. 1560.
Perforation of Large Intestine by Fish Bone. F. Brüning.—p. 1563.
*Food as Cause of Ileus. G. Haselhorst.—p. 1564.
Ludloff's Operation for Hallux Valgus. N. Grzywa.—p. 1567.
Blocking the Lumbar Plexus. H. Degenhardt.—p. 1570.
Position and Formation of Amputation Stump. A. Schanz.—p. 1573.
Gangrene of Previously Incarcerated Omentum. E. Metge.—p. 1574.

Food as Cause of Ileus.—In a woman, aged 63, a fig, and in a man a mixture of apple, pear and peas, blocking the intestine, was the cause of ileus. Haselhorst operated on both these cases, but he advises expectant treatment with purgatives and high enemas in the less stormy cases, if the cause of the ileus is ascertained. Cherry stones in large quantities, raw beans, cucumbers and raw or half-cooked oatmeal are noted in the literature as having caused ileus.

53: 1617-1680 (June 26) 1926

*Bacteriology of Gastric Surgery. W. Löhr.—p. 1618.
Incorrect Ligation of Cystic Duct. C. Flechtenmacher.—p. 1625.
*Emphysema as Sign of Ulcer Perforation. J. Vigyázó.—p. 1627.
Steel Fragment Two Years in Median Nerve. L. Seyberth.—p. 1632.
Familial Situs Inversus. A. H. Hofmann.—p. 1633.
Deutschlander's Disease of the Metatarsus. R. Bittrolff.—p. 1634.
"Errors and Blunders in Surgery." C. Prima.—p. 1637.

Bacteriology of the Stomach.—Löhr's studies in the bacteriology of perforated gastric and duodenal ulcer lead him to believe that in surgery on the stomach the colon bacillus flora is not greatly to be feared. In no early case of peritonitis following perforated gastric or duodenal ulcer, of twenty-two cases examined, did he find the colon bacillus flora in the free peritoneal cavity. In gastric surgery, bacteria entering from the mouth during the operation are more to be feared. In its early stage peritonitis from perforation is benign, while later, as a colon bacillus peritonitis, it is malignant.

Subcutaneous Emphysema in Ulcer Perforation.—Vigyázó describes a case in which, in a tabetic, the difficulty of ruling out gastric crisis from the differential diagnosis was overcome by the discovery, on palpation, of subcutaneous emphysema of the abdominal wall. At operation he found a pinhead perforation of a callous ulcer of the anterior wall of the duodenum. The margin of the serosa overhung the opening and acted as a valve to keep the air from the duodenum out of the abdominal cavity and force it instead into the subcutaneous tissue by way of the swollen serosa, the subserous tissue and the ligaments.

Zentralblatt für innere Medizin, Leipzig

47: 649-664 (July 3) 1926

*Copper and Intestinal *Catarrhs.* H. Sternberg.—p. 649.

Copper and Intestinal Catarrh.—Summarized in these columns Aug. 28, 1926, p. 716, when published elsewhere.

47: 665-688 (July 10) 1926

Thirty-Eighth German Congress for Internal Medicine at Wiesbaden. S. Litzner and R. E. Mark.—p. 665.

47: 689-712 (July 17) 1926

*Early Cachexia with Epithelioma of Thyroid. R. Dvořak.—p. 690.

Severe Cachexia as Earliest Symptom of an Epithelioma of the Thyroid.—In Dvořak's patient, a woman aged 56, with very severe cachexia, the few symptoms pointed erroneously to carcinoma of the gallbladder. There w[illegible] incriminating the thyroid, but histologic examination of the thyroid after death showed the beginning of malignant degeneration of an exophthalmic goiter.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 229-328 (July 17) 1926

The Writing of Medical Articles. G. van Rijnberk.—p. 230.
*Electric Pasteurization of Milk. E. C. van Leersum.—p. 234.
*Reversible Gel Formation and Fixation. M. A. van Herwerden.—p. 245.
*The Increase in Pulmonary Cancer. W. M. de Vries.—p. 255.
*Serotherapy in Postvaccinal Encephalitis. H. Aldershoff.—p. 267. Idem. F. S. van B. Bastiaanse.—p. 268.
Sarcoma in Rectum and Carcinoma in Gallbladder in Elderly Woman. O. H. Dijkstra.—p. 270.

The Electric Current in the Sterilization of Milk.—Van Leersum reports the results of research which have confirmed the bactericidal action on milk of the high frequency current. This occurs whether copper or carbon electrodes are used, but the carbon electrodes have the advantage that they do not destroy the antiscorbutic vitamin in the milk. He tabulates the outcome of various bacteriologic tests and inoculation of guinea-pigs with electrically treated milk containing tubercle bacilli.

Reversible Gel Formation and Fixation.—Van Herwerden describes his observation of gel formation in protozoa and metazoa under the influence of chemicals such as are used in fixation. The reversible gel formation is on the road to and very close to the nonreversible process of coagulation, that is, fixation. The reversibility of gel formation seems to decrease with the age of the cell and in pathologic conditions. This can be recognized in the dark-field microscope. Infusoria that have been exposed to the ultraviolet rays present a different aspect, although no difference in their lively movements can be detected, when compared with the nonexposed ones.

Cancer of the Lung.—De Vries found a pulmonary cancer in twelve female and in twenty-seven male cadavers in a total of 8,000 necropsies. More than half were observed in the last four years. No predisposition from family history or occupation could be discovered. This is what would be expected if street factors were responsible, asphalt, exhaust gases, etc.

Encephalitis Developing After Vaccination Against Smallpox.—Bastiaanse brought this question to the attention of the health board of the League of Nations in the effort to obtain serum from man or animals that had just recovered from severe smallpox, hoping to utilize it in production of an effectual antiserum. Serum for the purpose can be obtained from Bulgaria, from sheep that have been having severe sheeppox. But Gordon has succeeded in obtaining an effectual antiserum by actively immunizing animals by the cutaneous and intravenous route. No pustule develops in a rabbit inoculated with the most potent virus the day after subcutaneous injection of 1 cc. of this antiserum. Aldershoff has produced an antiserum on this principle, and announces that the Utrecht state serum institute is prepared to deliver this antiserum on request of physicians confronted with a case of postvaccinal encephalitis. Terburgh, Levaditi and others regard this encephalitis as the flaring up of a latent virus already present in the central nervous system, possibly the virus of epidemic encephalitis or of poliomyelitis. Lucksch, on the other hand, believes that it is a specific smallpox encephalitis. The postvaccinal encephalitis develops nine to fifteen days after the vaccination.

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*Sexual Inversion in Experimental Hermaphrodism. Pézard et al.—p. 693.
Ovarian Transplants in Cocks. Pézard et al.—p. 694.
Metal Salts in Treatment of Tuberculosis: Cadmium. N. Lunde.—p. 695.

Experimental Hermaphrodism.—Pézard, Sand and Caridroit report further experiments on fowls with transplanted gonads of the other sex. They confirm that the transplant may continue its function and exert a profound influence on the secondary sexual characters, without impairing the general constitution. In one noncastrated cock the ovary contained three young ova a year after its implantation, notwithstanding the [illegible] of both normal testes.